INDUSTRIAL MEDICINE AND SURGERY

Volume 25 AUGUST 1956 Number 8

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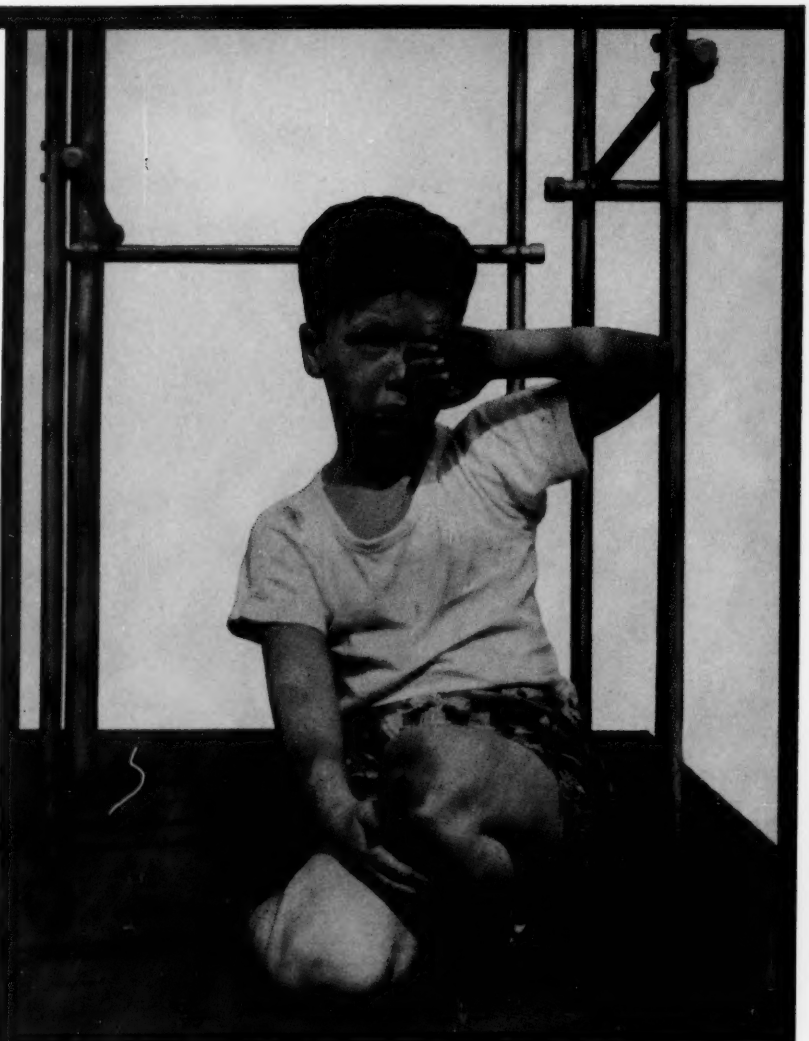

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REFERENCES: 1. Shipley, E. R., and Dodd, M. C.: Surg. Gyn. Obst. **84**:366, 1947.
2. Weeter, J. C.: The Open Method of Burn Therapy. A motion picture.

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This Journal is dedicated to the advancement of sound industrial medicine, including the surgery of industrial trauma. To that end its varying contents will embrace scientific papers, reports, digests, news items and official statements, together with editorial comment. The editorial policy is to avoid undue censorship. Some contributions ably prepared will be published although contravening the personal opinions of the editors. Care will be exercised in checking the accuracy of known facts, as printed, but in all other respects statements and opinions are those of the author and may not be shared by the editors. On any article, the editors reserve the right to comment favorably or otherwise, in the current or any subsequent issue. On this basis, contributions are invited. The opinions expressed in any contributions, including the editorials of this Journal, do not necessarily reflect the attitude or opinions of any associated organization.

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WILLIAM W. DAVIS, M.D., has been appointed Medical Director of the Columbus, Ohio, Division of North American Aircraft Company. DR. DAVIS has been physician with North American Aircraft Company since July, 1953. He has been Assistant Professor in the Department of Preventive Medicine at Ohio State University since 1953. He is also Commanding Officer of the 449th General Hospital, U.S. Army Reserve, Fort Hayes. After six years of private practice in Parkersburg, West Virginia, he took industrial residency training at Ohio State University and in-plant training at North American Aircraft July, 1952, to July, 1953. He is a native of Weston, West Virginia; a graduate of the University of Michigan; received his M.D. from Vanderbilt University. His internship and residency training were taken at Baltimore City and John Hopkins Hospital in Maryland. He was on active duty with the Army from December, 1940, to January, 1946; saw overseas service with the 10th Evacuation Hospital in the Southwest Pacific Area.

JEAN S. FELTON, M.D., Associate Professor of Medicine, and Preventive Medicine and Public Health, University of Oklahoma School of Medicine, was appointed, as of July 1, Professor of Preventive Medicine and Public Health (Occupational Medicine) and Consultant in Medicine, University of Oklahoma Medical Center, Oklahoma City. DR. FELTON recently received a Rockefeller Foundation Grant for two months (July and August, 1956) in England, Scotland, Ireland, and Wales for study and

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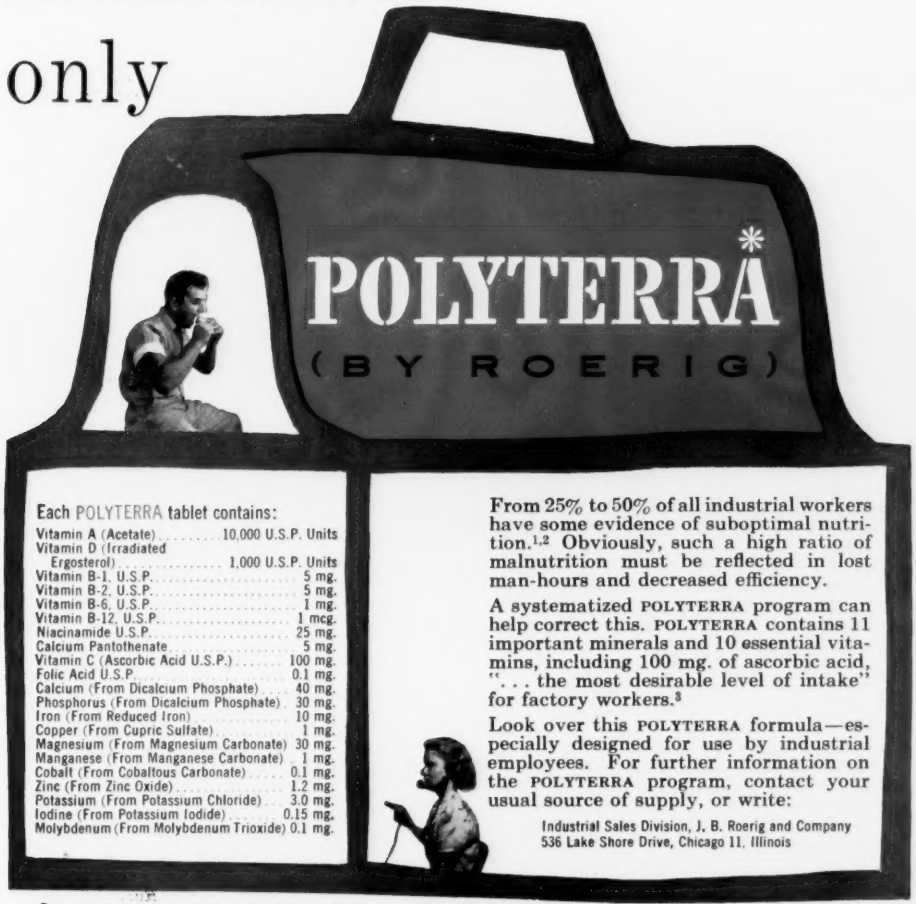

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1. Babcock, M. J., et al: Milbank Mem. Fund Quart.: *32*:323 (Oct.) 1954. 2. McLester, J. S. and Darby, W. J.: Nutrition and diet in health and disease. W. B. Saunders and Company, Philadelphia, 1952, p. 584. 3. Pollack, H. and Halpern, S. L.: Therapeutic Nutrition, National Research Council, publication 234, 1952, p. 37.

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observation in the medical schools and industrial plants, and left New York early in July for the tour.

LOUIS S. GERBER, M.D., Clinical Director, Sandia Corporation, Sandia Base, New Mexico, was recently appointed Medical Director at the National Reactor Testing Station, Idaho Falls, Idaho, to succeed MILAN R. MATEYKA, M.D., who plans to do postgraduate work in internal medicine.

HAROLD BRANDALEONE, M.D., Medical Director of the Third Avenue Transit System, and of the United Parcel Service, has been elected Treasurer of the New York University Alumni Federation for 1956-57. He was also elected Chairman of the Clinical Society of the New York Diabetes Association. The Association is sponsoring a Symposium on Glucagon and the Sulfonylureas, in New York City, on October 12, 1956.

RAYMOND F. HOLDEN, JR., M.D., formerly of St. Louis, was recently appointed Medical Director of Boeing Airplane Company, Wichita. He succeeds JAMES T. MOY, M.D., who resigned to devote his time to private practice. DR. MOY will continue his affiliation with the Boeing Airplane Company as a Consultant on a part-time basis.

WILLIS M. WEEDEN, M.D., Medical Director, Workmen's Compensation Board, State of New York, has been designated by the International Association of Industrial Accident Boards and Commissions as Chairman of the newly established Committee on Atomic Energy.

ON AUGUST 1, 1956, DR. LEONARD SCHEELE ended his career of 23 years with U.S. Public Health Service, the last eight as Surgeon General, to accept a position with Warner-Lambert Pharmaceutical Company. He said he was resigning to allow him "to provide more properly" for his family. Secretary Folsom praised DR. SCHEELE for his "imagination, skill and resourcefulness." DR. SCHEELE was reappointed last April to a third four-year term. Indications were that a successor would not be chosen immediately. During DR. SCHEELE's tenure as Surgeon General, four new research institutes were established by the Federal

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government, for heart, dental diseases, arthritis and metabolic diseases, and neurological diseases and blindness. In the same time, research appropriations for the institutes have increased from a few millions of dollars to the record-breaking $170 million just approved by Congress for the present fiscal year.

—*AMA Washington Letter*, July 6.

AMERICAN INDUSTRIAL HYGIENE ASSOCIATION is one of the sponsors of the Seventh Annual National Noise Abatement Symposium, October 11-12, 1956, at Hotel Sherman, Chicago. Among the 14 papers to be featured will be one on "Problems of Industry in a State with Hearing Loss Compensation Laws."

CALIFORNIA Department of Public Health, Bureau of Adult Health, has begun an inventory of in-plant medical services in operation in the State. The inventory, seeking only the most minimal information on plant size and type and extent of medical and nursing service available, is being carried on with the assistance of local health officers.

THE SEVENTH Annual Conference on Alcoholism was recently held at John Hancock Hall, Boston, under the auspices of the Boston Committee on Alcoholism. In a panel of industrial and business executives it was disclosed that alcoholism costs industry over a billion dollars and 60 million man-hours a year; that 10% more employees are afflicted by alcoholism than by tuberculosis; and that 55% more employees fall victim to alcoholism than are stricken by poliomyelitis.

—Medical News, *J.A.M.A.*, July 7.

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CIVIL Aeronautics Administration has authorized a $100,000 study of medical examination procedures in civil aviation under a contract with the Flight Safety Foundation, Inc. The study will attempt to determine (a) whether existing pilot physical standards are adequate; (b) whether crew members and ground personnel also should be examined periodically; and (c) whether experienced pilots who might otherwise be grounded for physical infirmities should be allowed to continue under certain restrictions. The study will also make recommendations on dealing with controversial interpretations resulting from divergent medical opinions.

—*AMA Washington Letter*, July 6.

A SEMINAR on "The Silicosis Hazard and Design of Dust Control Measures" was held June 18-20, 1956, at Mellon Institute. It was sponsored by Industrial Hygiene Foundation for members of the National Industrial Sand Association. Some 30 representatives of sand processing companies participated. DANIEL C. BRAUN, M.D., the Foundation's Medical Director, discussed "Clinical Aspects and X-ray Diagnosis of Silicosis." DR. H. H. SCHRENK, Research Director, and LEE SCHREIBEIS, JR., Field Survey Director of the Foundation, demonstrated methods of dust sampling.

JACKSON COUNTY Medical Society, Kansas City, Missouri, has published a 446-page Commemorative Issue of its *Weekly Bulletin*. The Commemorative Issue contains rosters of the Jackson County Medical Society, allied associations, and medical facilities in Jackson County and nearby areas. There are numerous interesting articles on medical subjects, and on the history and present state of the Society. JAMES J. LALLY, M.D., contributed a description of the INDUSTRIAL MEDICAL ASSOCIATION, its component societies, and allied organizations (page 1594).

AMERICAN Heart Association announces the initiation of two studies on the problems of heart disease victims returning to work: (1) an investigation of the actual physical effects of stress and strain on the circulatory system, and (2) an inquiry into the effects of current laws, administrative policies and court decisions, industrial practices and insurance experiences in connec-

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*Bonica, J.J.; and Backup, P.H.: *Northwest Med.*, 54:22, Jan., 1955.

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tion with employment opportunities for cardiacs. Both studies are being conducted under the supervision of the Association's Committee on Strain and Trauma, of which PAUL D. WHITE, M.D., Boston, is Chairman. The study on the physical effects of stress and strain on the circulatory system is directed by MILTON HELPERN, M.D., and MEYER TEXON, M.D., both of New York. The medicolegal study, which will involve analysis of workmen's compensation laws and administrative and judicial awards, will be directed by NORMAN PLUMMER, M.D., Medical Director, New York Telephone Company, and MR. BARNETT FOX, former New York State Workmen's Compensation Referee. MR. HENRY D. SAYER, former New York State Industrial Commissioner, will serve as Research Associate.

NEW YORK University Postgraduate Medical School is offering 29 courses in postgraduate medicine starting in September. Among these are an evening course of 15 weekly sessions on Industrial Hygiene given in cooperation with the College of Engineering under the direction of MERRIL EISENBUD; and a lecture course of 15 weekly sessions on Industrial Toxicology under the direction of DR. EDWARD D. PALMES.

INSTITUTE of Physical Medicine and Rehabilitation, New York University, Bellevue Medical Center, in conjunction with New York University School of Education, will present an advanced course in "Physical Rehabilitation Methods for Physical Therapists," from November 19 to December 14, 1956, February 4 to March 1, 1957, or April 29 to May 24, 1957. The course will be divided into three sections: "Severe Disabilities and Their Rehabilitation"; "Skills and Methods of Functional Activities"; and "Clinical Experience."

THE THIRD Annual Pacific Northwest Industrial Health Conference will be held in the Multnomah Hotel, Portland, Oregon, September 10-11, 1956. The Conference is arranged by the Health Affairs Committee of the Portland Chamber of Commerce. Among the subjects presented will be: "Mental Health Problems in Industry"; "The Role of the Industrial Nurse in the Plant Health Program"; "Health Responsibility of Industry in Relation to the Individual and the Community"; "Why Management, Labor and Medicine Must Look at the Total Industrial Health Picture"; "Where Are We Going in Workmen's Compensation?"; "Rehabilitation's Contribution to Industrial Health"; "Industrial Vision Conservation"; "Occupational Health Problems in an Industrial Society"; "The Noise Problems in Industry."

THE FOURTH International Congress on Diseases of the Chest of the American College of Chest Physicians will be held in Cologne, August 19-23, 1956. The patronage over the Congress has been assumed by the Federal Chancellor, DR. KONRAD ADENAUER. The Officers are: G. DOMAGK, President: H. W. KNIPPING, Vice-President; J. JACOBI, General Secretary; J. HEIN, Chairman of the Executive Committee; Executive Committee: O. BUURMAN, L. HEILMEYER, R. SCHOEN, W. UNVERRICHT, E. WOLLHEIM, H. WURM, R. ZENKER, A. BANYAI, M. KORNFELD. The presentations will be: "Coronary Diseases of the Chest"; "Industrial Diseases of the Chest"; "Virulence and Resistance Under Chemotherapy of Pulmonary Tuberculosis"; "Pulmonary Function"; "Cardiac Function"; "Tumors of the Mediastinum." The languages include English, French, Spanish and German—simultaneous translation. For information: Sekretariat des IV Internationalen Kongresses "American College of Chest Physicians," Koln-Deutz, Messeplatz (Germany).

AT A MEETING of the Board of Directors of the INDUSTRIAL MEDICAL ASSOCIATION at Philadelphia, April 24, the President of the Association, by resolution, was instructed to establish a committee in consultative status to the IMA on all policy matters pertaining to the certification of industrial health units; to appoint to its membership two IMA representatives; and to invite the AMA Council on Industrial Health, the American Academy of Occupational Medicine, the American Public Health Association, the American Industrial Hygiene Association, and the Industrial Nurses Association to select or appoint two representatives to act for their respective organizations. At this time, by appointment, KIEFFER DAVIS, M.D., and GEORGE F. WILKINS, M.D., are IMA representatives, with DR. DAVIS Chair-

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Speeds the return to work

Sept. 25. Second and third degree burns caused by flaming gasoline. Gauze pressure dressings of Vitamin A and D Ointment were changed at weekly intervals.

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man of the Committee; ROBERT A. KEHOE, M.D., and B. DIXON HOLLAND, M.D., are representatives of the AMA Council on Industrial Health; ALLAN D. BRANDT, Sc.D., Medical Division, Bethlehem Steel Company, and NATHAN VAN HENDRICKS, Esso Research and Engineering are representatives of the American Industrial Hygiene Association; JAMES P. HUGHES, M.D., Associate Professor of Occupational Medicine, Ohio State University, and J. WISTER MEIGS, M.D., Assistant Professor of Occupational Medicine, Yale University, are representatives of the American Public Health Association; and MRS. MARGARET LUCAL, R.N., and MRS. MARY DELEHANTY, R.N., are representatives of the American Association of Industrial Nurses. The IMA President may, on the advice of this Consultative Committee, appoint further representatives of other groups, or individuals who have a valid interest in the program of certification of industrial health services.

CARL ZENZ, M.D., Postgraduate Student in Occupational Medicine at the University of Cincinnati, will spend a year at Allis-Chalmers Manufacturing Company as Resident Physician in Occupational Medicine. PAUL J. WHITAKER, M.D., is Allis-Chalmers' Medical Director. DR. ZENZ received his M.D. at Jefferson Medical College in 1949, and is in training for the degree of Doctor of Science in Industrial Medicine. During 1941-42, DR. ZENZ spent 15 months with Allis-Chalmers as a Metallurgical Technician.

AT THE Industrial Health Conference in Philadelphia, April 21-27, 1956, the total attendance was 3,182. The participating groups in the Conference were the INDUSTRIAL MEDICAL ASSOCIATION, AMERICAN ASSOCIATION OF INDUSTRIAL NURSES, AMERICAN INDUSTRIAL HYGIENE ASSOCIATION, AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS, and AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS. The total paid registration included 853 members of the INDUSTRIAL MEDICAL ASSOCIATION.

THE RAMAZZINI SOCIETY, at the Falmouth sessions in 1955, had two vacancies in its membership. Nominations were made to fill these, and the two physicians elected were EARLE A. (BUD) IRVIN, M.D., and W. HARVEY CRUICKSHANK, M.D. The RAMAZZINI SOCIETY will hold its 1956 (Tenth) Anniversary Meeting at Tapoco Lodge in North Carolina in October.

TEXAS INDUSTRIAL MEDICAL ASSOCIATION, latest IMA Component Society, is one of the sponsors for the Ninth Annual Health Conference for Business and Industry to be held at Houston, Texas, September 20-22, 1956, at the Shamrock-Hilton Hotel.

JOHN J. POUTAS, M.D., Medical Director, Lever Brothers Company, New York, on July 11, 1956, at Case Institute of Technology, Cleveland, Ohio, led a discussion on "Executive Health," as part of the Institute's management-development program for executives.

WILLIAM A. SAWYER, M.D., is one of the July, 1956, "*GP Personalities in the Medical News.*" Identifying him as "A Presiding Officer," *GP* says of him: "Presiding officer at the recent Fourth Conference on Medical Care in the Bituminous Coal Mine Area, sponsored by the AMA's Committee on Medical Care for Industrial Workers, was DR. WILLIAM A. SAWYER, Chairman of the Joint Committee of the AMA Councils on Medical Service and Industrial Health. Conference objective— 'to develop better liaison between state medical associations and fund administrators for the amicable resolution of mutual problems stemming from the desire to improve quality of medical care in the bituminous coal mine area'— was carried on by reports, discussions of current problems and suggested solutions. A few weeks later, DR. SAWYER was present for the dedication and opening of the series of 10 hospitals built by the United Mine Workers Health and Welfare Fund to care for mine workers and their dependents, for whom many Academy members render service. DR. SAWYER, prominent in the field of industrial medicine, is now Medical Consultant to the International Association of Machinists."

PRIMERA CONFERENCIA Inter-Americana de Medicina del Trabajo. . . . 3, 4, 5 y 6 de septiembre de 1956." This is Spanish for "First Inter-American Conference on Occupational Medicine," and appears on the first page of the four-day program. This year the Conference will be held in Miami with the University of Miami, School of Medicine serving as host. It is expected that the Conference will be repeated next year, with the University of Havana serving as host.

Deaths

HARVEY G. MENSCH, M.D., 55, on May 2, 1956, at Harrison, New Jersey. DR. MENSCH was born in Pittsburgh in 1901, and interned there at Alleghany General Hospital; was physician with New Jersey Bell Telephone Company and then with Radio Corporation of America; served in Army Medical Corps, 1942-45; was a member of New Jersey State Neuropsychiatric Association; became a member of Industrial Medical Association in 1954; a Fellow, April 25, 1956.

ANDREW A. LOVE, M.D., 60, on June 11, 1956, at Burbank, California. DR. LOVE was Medical Director, B.O.P. Division, General Motors Corporation, Southgate, California. He graduated D.D.S. from the University of Minnesota, 1923, and M.D., University of Minnesota, 1930. He was a member of the Los Angeles County Medical Society, American College of Surgeons, American Society of Maxilla-Facial Surgeons, and the Industrial Medicine Association since 1952. He served in the U.S. Naval Reserve, 1918-19; U.S. Navy Medical Corps, 1929-30; and the Reserve USN until 1934.

DELLIVAN M. FUIKS, M.D., 53, on April 17, 1956, at Sacramento, California. DR. FUIKS, received his M.D. from the University of Iowa, 1927, and his M.S. in Orthopedics, 1937; was a member of the Sacramento Society for Medical Improvement; Western Orthopedic Association; the Orthopedic Board; and Colonel, Medical Corps Reserve. He was made a member of the Industrial Medical Association, April 26, 1952.

KENNETH A. HINES, M.D., 57, on May 10, 1956, at Meadville, Pennsylvania. DR. HINES was born in Meadville in 1898; was on the Staff at City Hospital and Spencer Hospital in Meadville; graduate M.D. from the University of Pennsylvania in 1927; was Industrial Surgeon with A.B. Shoe Company and Talon, Inc. He became a member of Industrial Medical Association, February 16, 1952.

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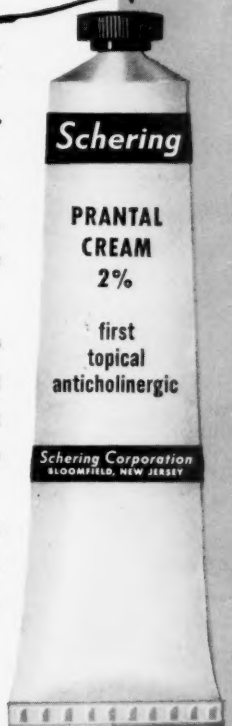

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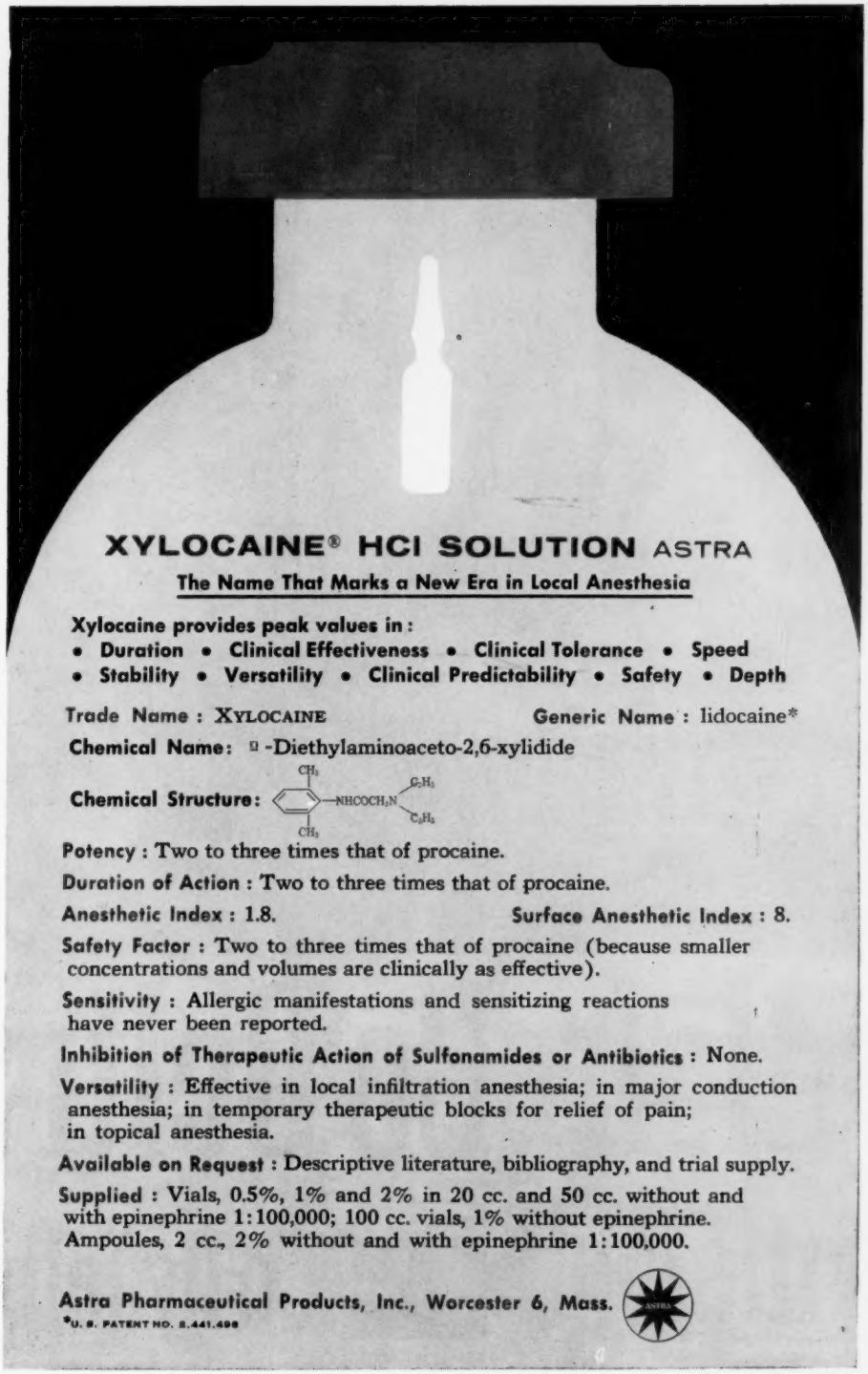

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all the benefits of the "predni-steroids"
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to minimize gastric distress

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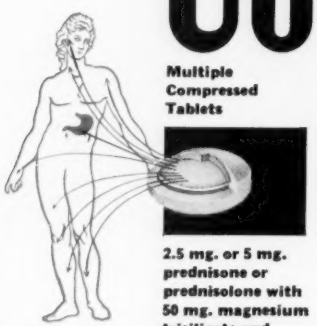

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Clinical evidence[1,2,3] indicates that to augment the therapeutic advantages of prednisone and prednisolone, antacids should be *routinely* co-administered to minimize gastric distress.

References: 1. Boland, E. W., *J.A.M.A.* 160:613, (February 25,) 1956. 2. Margolis, H. M. *et al, J.A.M.A.* 158:454, (June 11,) 1955. 3. Bollet, A. J. *et al, J.A.M.A.* 158:459, (June 11,) 1955.

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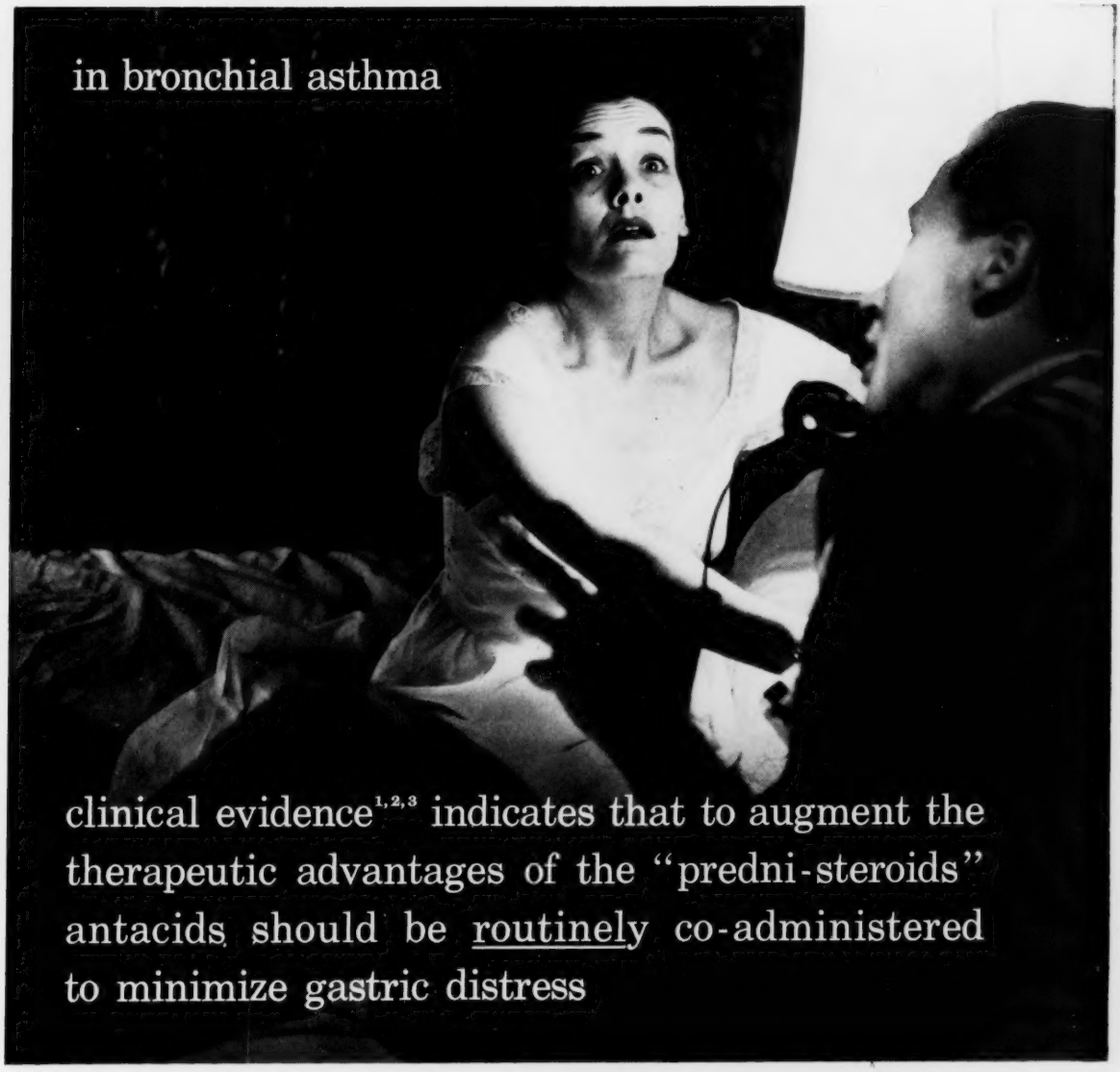
in bronchial asthma
clinical evidence[1,2,3] indicates that to augment the therapeutic advantages of the "predni-steroids" antacids should be routinely co-administered to minimize gastric distress

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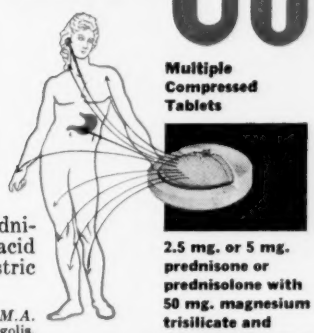

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2.5 mg. or 5 mg. prednisone or prednisolone with 50 mg. magnesium trisilicate and 300 mg. aluminum hydroxide gel.

All the benefits of the "predni-steroids" plus positive antacid action to minimize gastric distress.

References: 1. Boland, E. W., *J.A.M.A.* **160**:613, (February 25,) 1956. 2. Margolis, H. M. *et al*, *J.A.M.A.* **158**:454, (June 11,) 1955. 3. Bollet, A. J. *et al*, *J.A.M.A.* **158**:459, (June 11,) 1955.

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1. Johnston, T. G., and Cazort, A. G.: J. Allergy 27:90, 1956. 2. Schwartz, E.: New York J. Med. 56:570, 1956. 3. Schiller, I. W., et al.: J. Allergy 27:96, 1956.

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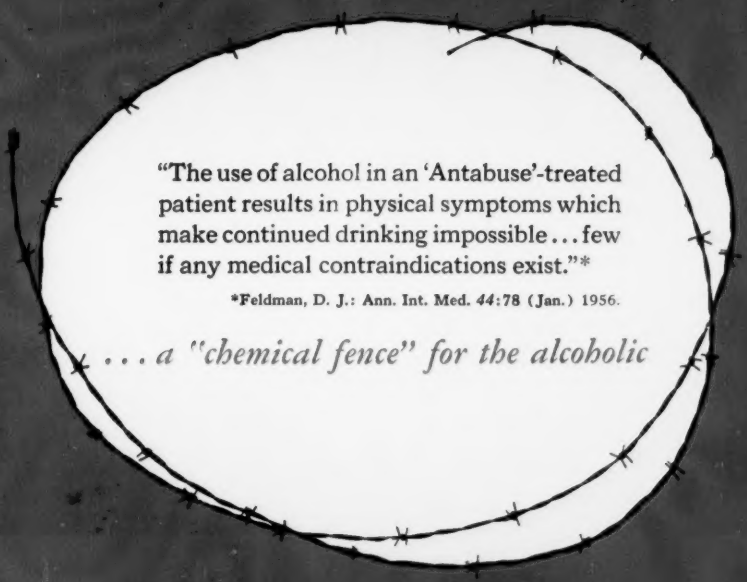
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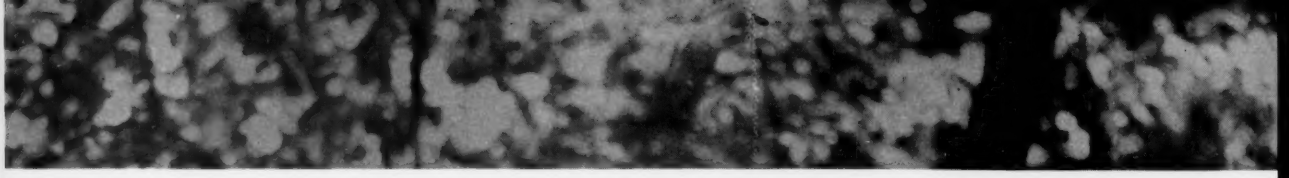

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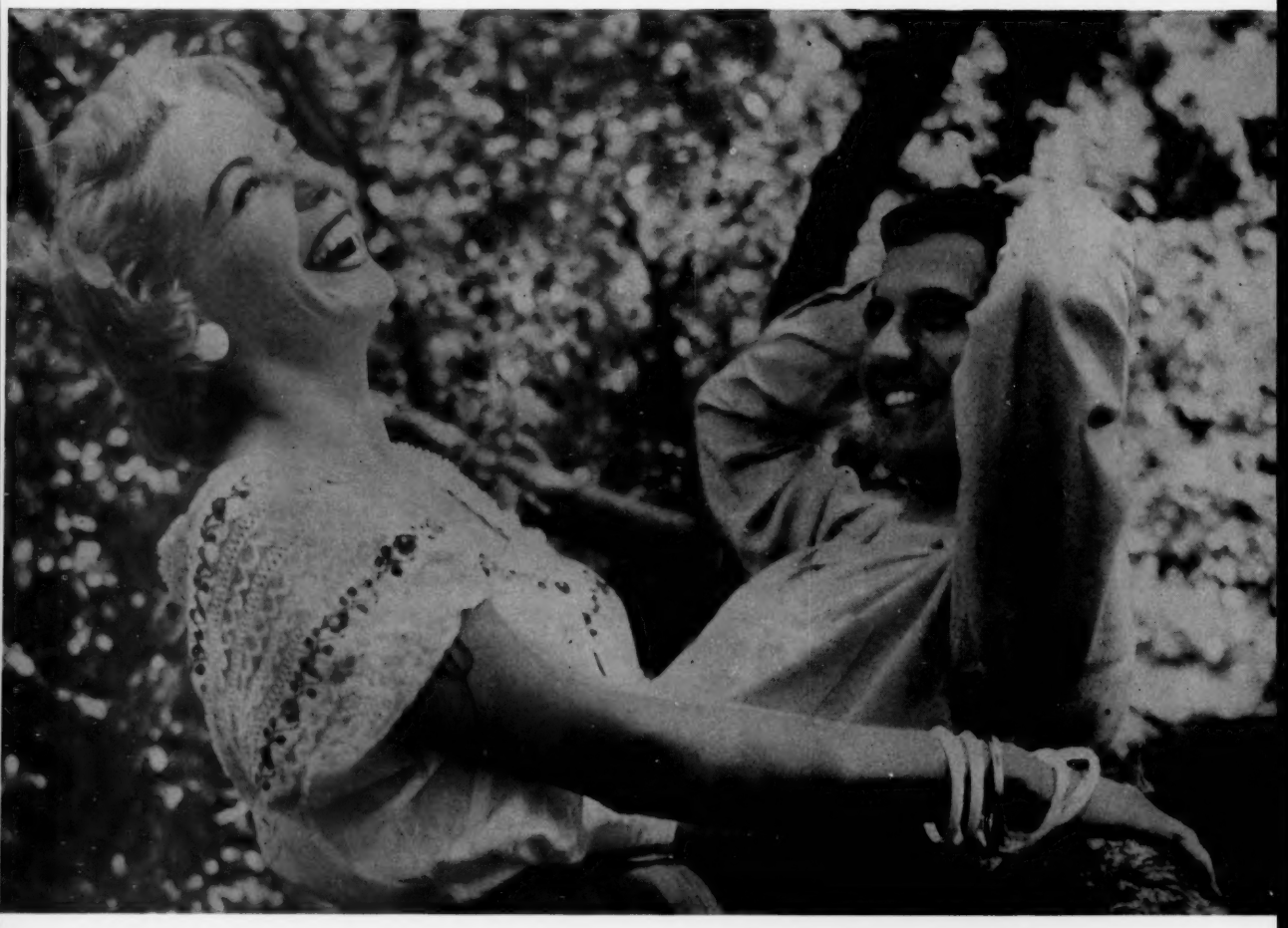

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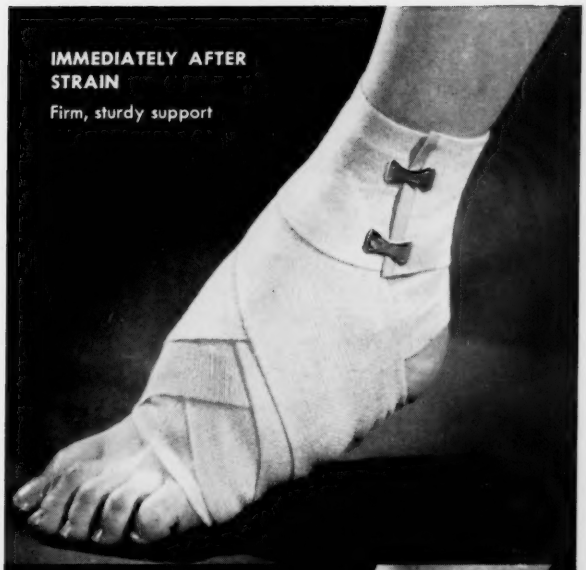

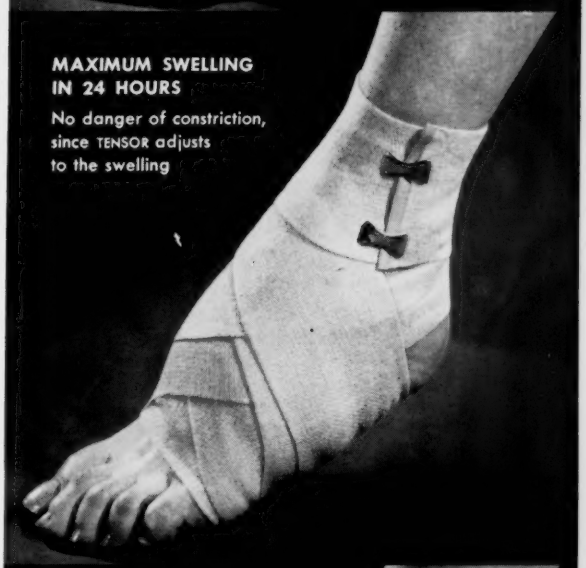

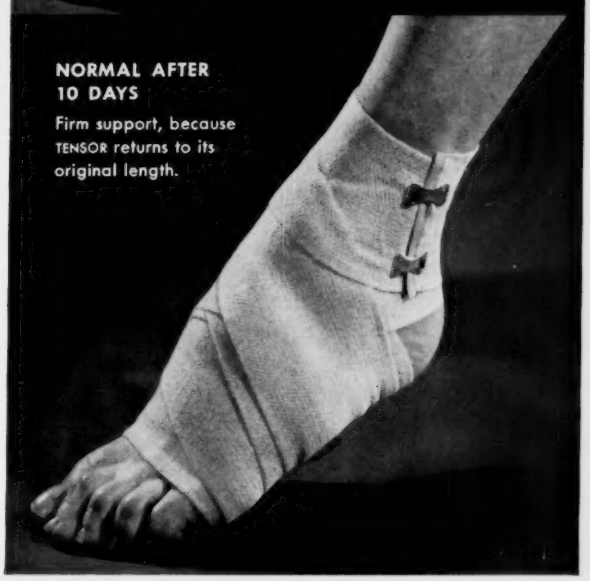

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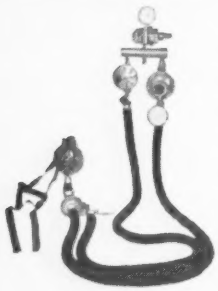

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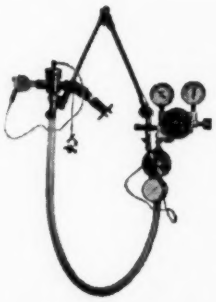

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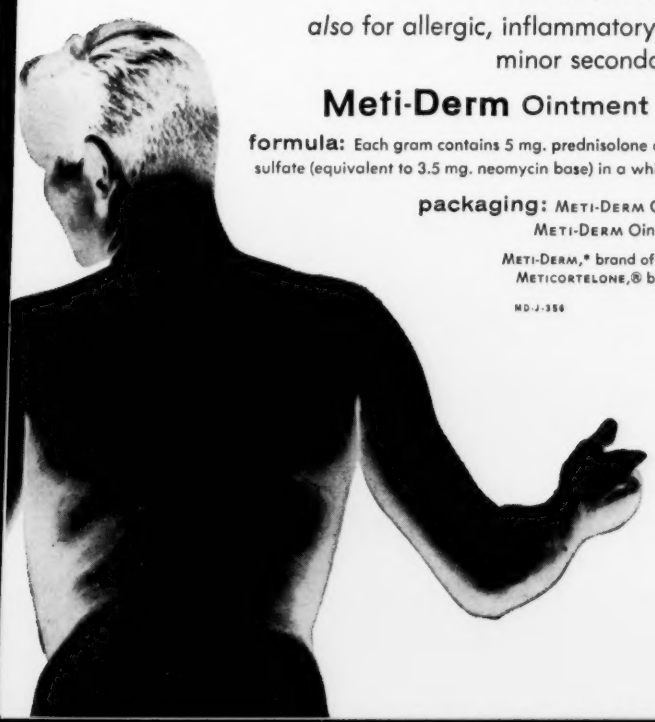

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INDUSTRIAL MEDICINE AND SURGERY

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Coal Workers' Pneumoconiosis

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THE LUNG DISEASES of coal miners have been the subject of numerous reports since 1822 when a description of coal miners' "asthma" was published.[1] The "black lungs" of coal miners observed at autopsies were attributed to coal dust in 1813,[2] and in 1831 the condition was first identified as a disease associated with coal mining.[3] Coal dust, before the 20th century, was generally accepted as the primary cause of the respiratory disability and the morbid pulmonary changes observed in coal miners.[3] Silica then became labelled as the only harmful dust and silicosis as the only important occupational dust disease.[3,4] By 1928, however, British investigators were reporting radiographic differences between silica and coal dust exposures.[3,5-7] A little later the 1931 and 1934 amendments to the British workmen's compensation legislation focused attention on the large number of coal miners with a respiratory disability which could not be attributed to silicosis.[3,6-9]

The British Medical Research Council in 1937 initiated comprehensive studies of chronic pulmonary disease among coal miners with particular reference to conditions in the South Wales coal field. Their first report identified a new type of dust disease as "coal workers' pneumokoniosis."[10] The following year this disease, as distinct from, and in addition to, classical silicosis, became compensable.[3,6-8] In Britain, coal workers' pneumoconiosis is now generally considered to be a diagnosable occupational dust disease separable into two distinct forms, simple and complicated.[6-8,11-16] It is reported to have characteristic pulmonary radiological changes which have been observed in workers exposed to hard or soft coal and some other carbon dusts.[10,11,16-21] Pathological studies have demonstrated lesions which are believed to be specifically characteristic.[7,10,11,16,22-27]

Numerous reports on coal workers' pneumoconiosis have been made in British medical journals,[3,4,28-32] but relatively few have appeared in the U.S., the first having been published in 1947.[24] Most U.S. articles have used such terms as "anthraco-silicosis," "anthracosis," or "miners' asthma."[10,22,32-44] Some recent publications have reported the presence of coal workers' pneumoconiosis in the U.S.,[11,23,45-51] but the extent of the disease in this country is unknown. There is, however, a growing segment of opinion that the disease may constitute a real problem in the U.S. which will stimulate requests for advice and assistance from practicing physicians, health departments, workmen's compensation officials, and rehabilitation counselors.

This article endeavors to present a brief resume of the British experience which may be of some value in the U.S. It summarizes the current understanding of the essential features of coal workers' pneumoconiosis as reported principally by British investigators. *The controversial aspects of the disease are recognized, but for the sake of readability the material is presented usually as definite statements which are then supported by the pertinent references.*

Diagnosis and Clinical Course

THE DIAGNOSIS of coal workers' pneumoconiosis is largely dependent on characteristic chest radiographs supported by an occupational history of exposure to coal dust.[10,11,14,15,17,45,52] The clinical history and physical examination provide little that is helpful in making a diagnosis, but they are important in differentiating pulmonary and cardiac conditions which simulate or complicate the disease.[52-55] Cough, though frequent, is not usually distressing until the disease is well advanced, when it is often associated with efforts to expectorate a tenacious sputum.[8,15,45,52,54-56] This usually occurs on awaking and leads to severe paroxysms of coughing and wheezing which can be exhausting. Coal stained sputum is a common but usually harmless symptom which may persist for some time after the worker leaves the mines.[8,10,54] The copious expectoration of inky black sputum, however, occurs only when pneumoconiosis is quite advanced and may be indicative of an infectious process.[8,15,16,54] Asthenia, loss of weight, chest pain, and "tightness in the chest"[8] are usually restricted to the more seriously disabled workers with complicated disease.

Severe breathlessness on exertion disproportionate to the age of the worker is usually not observed until the disease is well advanced.[7,8,11,15,54,56-58] Exertional dyspnea is usually gradual in onset, may be accelerated or accentuated by respiratory tract infections, and may be disabling with the increasing age of the worker and severity

of the disease. Although exertional dyspnea is the coal miner's most common complaint, it is difficult to evaluate precisely.[8,45,54,56,57,59-61] Recent articles have suggested the need for making sufficient allowance for the effects of age, which in itself may be the cause of dyspnea not readily separable from that caused by coal workers' pneumoconiosis. This is particularly true of the earlier stages of the disease. Psychogenic disturbances also may play an important role.[48]

Coal workers' pneumoconiosis is generally a progressive disease having a highly variable rate of progression.[54,58,62,63] Simple pneumoconiosis rarely progresses in serial radiographs in the absence of further dust exposure or when the worker transfers to a less dusty working environment. As the dust in the lungs increases and simple pneumoconiosis becomes well established it may, however, become complicated by the development of massive fibrosis independent of further dust exposure.[54,58,62] This produces the second form of the disease, complicated pneumoconiosis, the progression of which varies considerably and is unrelated to further dust exposure.

Radiology

RADIOGRAPHIC examination of the lungs is essential for determining the earliest changes, severity, progression and prevalence of coal workers' pneumoconiosis.[10,14,17,18,58,63-67] A standardized method of describing and classifying the radiographic changes has been developed and accepted with minor modifications by the International Labor Office Conference of Experts on Pneumoconiosis in 1950.[17,19,67,68] Subsequent international experience with the classification is reported to be sufficiently helpful to warrant U.S. evaluation of the system.[12,17,22,45,69] The classification is purely radiological and does not imply a relationship between categories of abnormality and "suffering from pneumoconiosis,"[19] the presence of a compensable disease or a particular degree of disability. Two major types of changes, simple and complicated pneumoconiosis, are defined and the "dust opacity" is described as the basic abnormality.

The three categories of simple pneumoconiosis, designated 1, 2 and 3, are distinguished chiefly by the profusion and distribution of the opacities. "The characteristic opacities are minute (0.5-1.5 mm. diam.), more or less circular, and fairly well defined in outline. They commonly appear in clumps. The appearance is thus granular in type but fine linear opacities often connect adjacent minute opacities into chains which enclose small translucent areas and result in a fine lace-like appearance. Large, more or less circular, opacities up to 5 mm. in diameter also occur."[68] The significance of increased linear markings is said to be too uncertain for their inclusion in the classification. The earliest radiographic changes of simple pneumoconiosis may not be associated with any clinical or physiological manifestations nor do they necessarily indicate the presence of a disease.[16,17,58,62,68] They are considered, however, to be the "infallible precursors"[14] of the disability associated with the later stages of coal workers' pneumoconiosis.

The four categories of complicated pneumoconiosis, designated A, B, C, and D, are differentiated by the size of the massive shadows and the degree of the distortion and obscuration of lung markings. The earliest changes occur on a background of simple pneumoconiosis, Category 2 or 3, and consist of opacities which are large (1 cm. or more in diam.) and not as well defined as those observed in the simple form. They frequently resemble tuberculous lesions, both in location and appearance. "In the course of time, these shadows tend to grow and coalesce to form larger shadows of various shapes and sizes"[17] with eventual pulmonary distortion and the development of "gross emphysema."

Standard films and photographs illustrating the system of classifying coal workers' pneumoconiosis have been evolved by the Pneumoconiosis Research Unit.[17,19,22,67,69-71] A higher consistency of proper radiographic classification is usually obtained, particularly among less experienced observers, with the use of the standard reference films. Their use is enhanced when recommended standards for the exposure and development of patient films are observed.[17,65,68,70] It is also recommended that duplicate readings be made on all patient films with an additional third reading in the event of disagreement between the first two. Miniature films are not satisfactory for the proper classification of coal workers' pneumoconiosis, and their use should be discouraged.[12,19,67,69,72]

The correlation of postmortem findings with ante mortem radiography has shown that the coal macule of simple pneumoconiosis is the cause of the granular and pinhead opacities observed in the radiographs.[11,17,24,26,27,66] These opacities are less striking than those observed in silicosis. Thus, some radiologists unfamiliar with the characteristic appearance of coal workers' pneumoconiosis are inclined "to regard the radiographic changes as trivial and not necessarily diagnostic of disease."[66] The significance of the radiographs is apparent, however, when comparisons are made with the autopsied lung. The exceptions are those minimal cases with lesions not radiologically apparent. There is a fairly close correlation between the two types of examinations in slight or moderate pneumoconiosis. The major difficulty in making a correct radiological diagnosis of complicated pneumoconiosis is the occasional confusion with pulmonary malignancies. The radiograph is rarely helpful in determining the severity of the focal emphysema observed at autopsy.[11,17,66,73]

Statistical assessment of silicosis and coal workers' pneumoconiosis mortality among coal miners has been hampered by the lack of essential medical and statistical information. A recent report[74,75] of a continuing study designed to correct these deficiencies presents the first standardized mortality rates for coal workers' pneumoconiosis. These ratios are related to the ante mortem application of the international radio-

logical classification of the disease. The tabulation thus far indicates that the death rate for coal miners with simple pneumoconiosis, including Category 3, is essentially the same as the general population. The mortality rate for miners with complicated pneumoconiosis, however, is nearly 30% higher.

Etiology

THE ETIOLOGY of simple pneumoconiosis has been attributed to many factors[10,22,23,55,76-79] but particularly to the free silica in the coal. Histologically, coal workers' pneumoconiosis and silicosis are reported to have little in common,[9-11,23-27,76,77,79,80] although the coal macule and silicosis nodule are said to occur in the same location.[50,51] According to these reports the chief differences are: the silicosis nodule contains less total dust; it is considerably more fibrotic; and the bronchioles become stenosed as silicosis progresses, whereas they dilate with the progression of coal workers' pneumoconiosis. Clinically exertional dyspnea is more severe in complicated pneumoconiosis and open tuberculosis is a common cause of death in silicosis but uncommon with coal workers' pneumoconiosis.

Silicosis develops among a relatively small number of coal miners especially those who are engaged extensively in rock drilling. Silicosis and coal workers' pneumoconiosis may occur in the same worker but usually proper differentiation at autopsy is possible.[9-11,26,51,66] Because of the extensive use of sand for traction on the rails in the haulage ways in the U.S. and the recent increase in "roof-bolting" where the drilling may be very dusty, it is possible that the silicotic element may be greater in U.S. coal miners than realized.

The higher carbon content (rank of coal) of anthracite as contrasted with bituminous coal is thought to be a possible cause of coal workers' pneumoconiosis.[10,11,76,77,79] This is unlikely because the coal macule is the same in workers exposed to either anthracite or bituminous coal dust and coal workers' pneumoconiosis (simple or complicated) occurs in workers exposed to the fine dust of either hard or soft coal.[14,23,27,50,51,55,80]

The long cold journeys underground and fumes from explosives have also been suggested as etiological factors. The reports, however, of coal workers' pneumoconiosis among men loading coal in ships with neither of these exposures have negated these theories.[9,10,23-26,76,77] At the most these are thought to be only contributing factors if they are factors at all.

The essential cause of simple pneumoconiosis is the gradual pulmonary accumulation of fine particles (less than 5-7 microns in diameter) of coal dust.[11,22,23,25,50,51,55] The genesis is thus the simple mechanical overloading of the lungs with dust rather than the activity of free silica. Related factors are the concentration of respirable dust in the air, duration of exposure to dust, and the worker's respiratory rate.[81-86] Individual susceptibility is thought to play a minor role.

Complicated pneumoconiosis is a combination of simple pneumoconiosis and progressive massive fibrosis which it is postulated is caused by a coal dust modified tuberculous reaction.[11,23,87-94] This hypothesis is believed to be supported by the: tendency of the lesions to occur in the same pulmonary areas in which tuberculosis generally develops; microscopic appearance of the lesions which frequently show evidence of a chronic infective process resembling tuberculosis; recovery of the tubercle bacillus in about 40% of the necropsies of complicated pneumoconiosis although only 1% to 10% (dependent on the population sampled) have a posiitive sputum ante mortem; radiological onset and progression of complicated pneumoconiosis independent of dust exposure; epidemiological studies of the disease; and recent animal experiments in which a "condition of fibrosis virtually indistinguishable from human progressive massive fibrosis"[94] was produced. Although unproved, the hypothesis is said to "remain attractive"[17] and to be the "simplest explanation"[70] of presently known facts.

Pathology

IN SIMPLE pneumoconiosis there is widespread accumulation of foci of coal dust and a small amount of fibrous tissue which appear as black spots having a diameter of 5 mm. or less.[23-27,50,51,55] The border of the focus or "coal macule" is uneven, having a "Medusa Head"[11] appearance in contrast to the spherical outline of the silicotic nodule. The coal macule usually originates in the secondary lobule of the lung where it surrounds the respiratory bronchiole with a "sheath" of dust and fibrous tissue. The proximal limit of this consolidated sheath occurs regularly in the region of the terminal bronchiole, but the distal limit, being directly related to the amount of accumulated coal dust, is variable but rarely extends to the alveolar duct.

The localized accumulation of coal dust is frequently followed by the dilatation of the associated respiratory bronchiole, to form *focal* emphysema.[23-27,50,51,66] The resultant lesion constitutes the most striking feature of coal workers' pneumoconiosis and has been observed in the autopsied lungs of Welsh, Scottish and American coal workers.[23,50,51] This focal emphysema is rare[11] in the "normal lung"[16] and is not "associated with the simple silicotic nodule."[51] In addition it was not observed in any one of 15 "control cases of silicosis."[23] It is different from generalized vesicular emphysema which usually involves the primary lobule and is characterized by dilatation of the alveolar ducts, atria and alveolar sacs.[50,73] Although the development of vesicular emphysema is thought to be independent of dust accumulation, the two types may coexist in some coal workers. Any possible functional significance of the focal emphysema remains to be determined.[95]

Complicated pneumoconiosis is massive fibrosis superimposed on a "good deal"[16] of simple pneumoconiosis.[11,23-26,55,66] Massive fibrosis is represented by the formation of collagenous nodules

(one to several cm. in diameter) which usually appear first in the posterior portion of the upper two-thirds of the lung. These nodules tend to coalesce and form areas of massive fibrosis, the centers of which often cavitate and liquify. In addition, hard fibrous nodules having a diameter of one cm. or less usually occur in the lung tissues adjoining the massive fibrosis. They are believed to have the same etiology as the massive lesions and are referred to as "infective nodules." Contraction of the fibrous tissue in the massive lesions tends to occur as the disease progresses with subsequent distortion of the remaining lung tissue and the formation of bullous emphysema.

The massive lesions develop slowly and have their main effect on the pulmonary circulation producing a marked right ventricular hypertrophy and dilatation and ultimately death from congestive cardiac failure[7,11,24-26,55,96-99]. This rarely occurs in simple pneumoconiosis. Pulmonary arterial thrombosis and the rapid spread of tuberculosis with caseation and bronchopneumonia have also been reported as causes of death in complicated pneumoconiosis.

Respiratory Physiology

THE MAJOR disability of coal workers' pneumoconiosis is an abnormal shortness of breath on exertion disproportionate to the age of the worker.[10,12,15,45,54,56,57,61] Exertional dyspnea in simple pneumoconiosis is rarely disabling to workers under 55 years of age and over 55 it may be only moderately disabling. Many workers with simple pneumoconiosis have no symptoms, others may be slightly breathless on climbing stairs, while some older men may be severely limited in their activities. In the last group the disease frequently coexists with an unrelated heart or lung disease which is the major cause of the respiratory disability.

Exertional dyspnea, as a cause of disability in complicated pneumoconiosis, may occur at any age and usually increases with the age of the worker and the severity of the disease. It is often extreme in older men and in the later stages of complicated pneumoconiosis. Massive fibrosis is usually the main cause of the disability.

Exceptions to the preceding general conclusions prevent estimates of individual disability solely on radiographic findings.[8,14,45,57,58,61] In fact, the radiographic classification of coal workers' pneumoconiosis was developed primarily to avoid the radiological disability determinations associated with earlier classifications of silicosis.[16-19] The individual degree of disability and the extent of compensability must be determined clinically and physiologically, with an understanding of the natural history of the disease.

The exertional dyspnea is due to a decrease of the total lung volume rather than an increased requirement of air for a given amount of work, although the latter may also occur in the advanced stages of the disease.[57,58,61,100,101] This decrease in simple pneumoconiosis is usually somewhat greater than that which occurs normally with increasing age. In complicated pneumoconiosis, however, the total lung volume is usually decreased markedly with increasing age and severity of the disease. The diminished total lung volume is reported to be due principally to a fall in vital capacity with the absolute residual capacity remaining relatively constant. Nonindustrial emphysema, in contrast, often produces an absolute increase in residual capacity with the lung volume remaining normal or even increased.

Disturbances in gas distribution and transfer are believed to occur only in the advanced stages of coal workers' pneumoconiosis; to be associated with the development of cor pulmonale; and to be of much less importance than the diminished ventilatory capacity.[57,101,102] The available evidence is said to indicate that disturbed ventilatory function is the "principal cause of disability in dust diseases of the lung."[103,104]

Measurement of the maximum breathing capacity (MBC) is the test most frequently used to assess exertional dyspnea.[41-43,45,56,100,101,103-108] A technic which may supplant MBC for simple clinical investigation is measurement of the expiratory flow rate on a single expiration.[103-105] A number of other physiologic tests such as measurement of intrapulmonary gas mixing and carbon monoxide uptake are reported to be helpful in a more thorough evaluation of exertional dyspnea.[100,102,105-108] A combination of several of these tests "in the form of a discriminant function"[100] is suggested as more satisfactory than a single physiologic test. Until the development of more discriminatory tests and standardized equipment, it is recommended that there should be a wide clinical use of the simple tests available for measuring exertional dyspnea.[60,100-103,105]

Therapy

THE CURRENT treatment of coal workers' pneumoconiosis is limited to symptomatic relief with no known method of cure.[15,41,45,108-110] The anatomical changes are believed to be irreversible insofar as present medical knowledge is concerned. Breathlessness is frequently accentuated by such conditions as cold temperatures, bronchospasms, acute pulmonary infections and coughing.[7,8,52,54,56] Many men are relieved by sleeping in a warm room and avoiding sudden temperature changes insofar as possible. Considerable benefit is gained by teaching the men correct self-administration of bronchodilator medication. It is suggested that cortisone may be of some value in the treatment of patients with severe bronchospasm who have not responded to other therapy.[15,111]

Acute pulmonary infections require prompt and effective treatment preferably with an antibiotic which should be continued for some time after the patient has improved. Troublesome coughing responds in some cases to postural drainage and in others to full doses of codeine. The addition of an expectorant to the early morning cup of hot coffee or water is helpful to those

with severe shortness of breath upon awaking.

The medical or surgical treatment of men with complicated pneumoconiosis who develop sputum containing tubercle bacilli is unsatisfactory and rarely increases survival beyond two years.[15] The treatment of advancing complicated pneumoconiosis with a persistently negative sputum with antituberculous chemotherapy is believed to have little immediate effect.[112] Long-term chemotherapy, however, may have a possible beneficial effect. In the absence of a positive sputum, coal workers' pneumoconiosis is not a communicable disease and continued employment is not contraindicated.[8,15,54,59,91,92]

An upper respiratory infection may precipitate cor pulmonale which often improves dramatically with rest in bed, large doses of antibiotics and an equable temperature.[15,45,109] The usual therapy for cardiac failure is also helpful when indicated. Oxygen therapy is reported to be of considerable value in both the acute exacerbation and the ambulatory case of cor pulmonale.

The intermittent positive pressure breathing (IPPB) of oxygen combined with a bronchodilator aerosol is reported to be an effective treatment for exertional dyspnea.[41,45,108-110] The more severely disabled workers usually derive greater benefit from this treatment with relief ranging ordinarily from good to excellent. Improvement is usually temporary (a few hours to several months) but some of the less severely affected men have returned to work in the mines following such treatment. Regardless of the time interval since the last treatment, further treatment with rare exceptions is said to be effective when symptoms return.

Some general therapeutic measures which are recommended are: improvement of nutritional status;[7,8,45,54] correction of physical defects (hernia, hemorrhoids) when they interfere with satisfactory respiration;[41,108-110] and general and breathing exercises.[7,15,54,109] A competent physiotherapist is important in teaching these exercises as well as in the rehabilitation of those workers who may be quite disabled but still employable in less demanding jobs.

A correct and sympathetic explanation to the worker of the nature of his complaints is most important.[7,8,11,15,54,55,58,62] Simple pneumoconiosis can be clarified by explaining that the retained pulmonary dust may cause no more disability than the pigmented coal scars on the hand. No reference to "pneumoconiosis" is made in explaining Category 1, simple pneumoconiosis, because of the problems of correct diagnosis and the improbability of complicated pneumoconiosis developing at this stage.[15] A full explanation of the disease and individual findings, however, is desirable for all men with more than Category 1, simple pneumoconiosis. The only workers generally advised to leave the mines or to change to a less dusty job in the mines are those with advancing simple pneumoconiosis, Category 1, particularly if young, and those with advanced pneumoconiosis who are too disabled to work or have a sputum positive for tuberculosis.

Prevention

COAL WORKERS' pneumoconiosis is a preventable disease which, with the application of adequate control measures, could be eliminated.[8,14,55,58,78,82,84,85] This would require the effective suppression of coal dust at its source, whether below or above ground. Dust suppression is primarily an engineering problem, but to be effective it is essential that the engineers, physicians and coal workers operate as a team.[53,58,62,78,113]

The increased mechanization of British coal mining with its attendant dustiness is considered a major factor in the increased prevalence of coal workers' pneumoconiosis in Britain.[14,22,54,78,82-86] Various engineering techniques such as improved ventilation and the extensive use of water (infusion before cutting and sprays during the transit of coal) have reduced the concentrations of dust underground.[55,78,79] The application of preventive engineering methods will materially reduce the occupational hazards of coal dust but at present may not prevent completely the results of excessive exposure.[82,84-86,114,115] The prevention of silicosis among coal miners is possible by such additional measures as the adequate suppression of dust from rock drilling and the use of nonsiliceous materials for rail traction in the haulage ways.[116]

The eradication of pulmonary tuberculosis in coal mining communities is advocated to assist in eliminating complicated pneumoconiosis.[14,17,89-93] In addition workers leaving the mining communities should receive continued medical supervision because of the possible later development of tuberculosis. If tuberculosis develops, members of the miner's family should be examined regularly to exclude infection in them.

A further preventive measure is the limitation of the total period of dust exposure.[58,62,84,117,118] This can be accomplished by: limiting the working period on a dusty job; placing an upper age limit on hazardous dust exposure; and advising employment in less dusty jobs when indicated.

Improved workmen's compensation legislation and the enforcement of existing occupational health laws and regulations would encourage the application and improvement of known preventive measures.[3,7,8,10,11,55,76-78,119] It is also generally agreed that additional research is necessary to solve some fundamental problems, such as the etiological mechanism of coal dust and safe limits of dust concentration. This information is essential for the prevention and eventual elimination of coal workers' pneumoconiosis. British investigations are being augmented by extensive research in six western Continental countries where 10% of the coal miners are said to be afflicted with some form of the disease.[120]

Summary

COAL WORKERS' pneumoconiosis is generally considered by British investigators to be an occupational lung disease separable into two distinct forms, simple and complicated pneumoconiosis. The former is due to the pulmonary accumulation of coal dust which produces a mechanical

overloading of the lungs while the latter is tentatively assumed to be due to tuberculosis modified by dust. The disease is reported to have characteristic pathological and radiological changes distinct from classical silicosis and to be diagnosable by pulmonary radiographs and occupational history. Exertional dyspnea is rarely disabling in simple pneumoconiosis in workers under 55 years of age while complicated pneumoconiosis may be a cause of disability at all ages. The degree of disability increases with the age of the worker and the severity of the disease. The exertional dyspnea is thought to be due to a reduced ventilatory capacity with little reduction in diffusing capacity except in the most advanced stages of the disease. Treatment is symptomatic with IPPB combined with a bronchodilator aerosol reported to be an effective adjuvant. Prevention is possible with the aid of numerous skills, the improvement and enforcement of related legislation and continuing research.

Coal workers' pneumoconiosis is recognized legally and medically in Britain and medically in some other countries. The disease is reported to occur in the U.S. but the prevalence is unknown.

Some of the fundamental problems which require further study are: the precise etiological role of coal dust; the mechanism modifying the possible tuberculous process; the cause and correct assessment of the respiratory disability; the efficacy of various therapeutic measures; and the safe limit of total dust exposure.

References

1. ROSEN, G.: The History of Miners' Diseases. New York, Schumans, 1943, p. 194.
2. *Ibid.*, p. 250.
3. MEIKLEJOHN, A.: History of Lung Diseases of Coal Miners in Great Britain: Part I, 1800-1875. *Brit. J. Ind. M.*, 8:127 (July) 1951; Part II, 1875-1920, *Brit. J. Ind. M.*, 9:93 (April) 1952; Part III, 1920-1952, *Brit. J. Ind. M.*, 9:208 (July) 1952.
4. FORBES, J. J., DAVENPORT, S. J., and MORGIS, G. G.: Review of Literature on Dusts. *U.S. Dept. Int., Bull. No. 478*, Washington, D.C., U.S. Govt. Print. Off., 1950.
5. COLLIS, E. L., and GILCHRIST, J. C.: Effects of Dust upon Coal Trimmers. *J. Ind. Hyg.*, 10:101 (April) 1928.
6. FLETCHER, C. M.: Pneumoconiosis of Coal Miners. *Brit. M. J.*, 1:1015 (May) 1948; 1:1065 (June) 1948.
7. FLETCHER, C. M., and GOUGH, J.: Coalminers' Pneumoconiosis. *Brit. M. Bull.*, 7:42, 1950.
8. HUGH-JONES, P., and FLETCHER, C. M.: The Social Consequences of Pneumoconiosis Among Coalminers in South Wales. *Medical Research Council Memo. No. 25*, London, H.M. Stationery Off., 1951.
9. GOUGH, J.: Pneumoconiosis in Coal Trimmers. *J. Path. Bac.*, 51:277 (September) 1940.
10. *Medical Research Council, Special Report Series, No. 243*: Chronic Pulmonary Disease in South Wales Coalminers: I. Medical Studies, A. - Report by the Committee on Industrial Pulmonary Disease. B. -Medical Survey. C. - Pathological Report. London, H.M. Stationery Off., 1942.
11. GOUGH, J.: Patterns in Pneumoconiosis. *Fourth Conference on Silicosis and Aluminum Therapy, January 28-30, 1952*, Toronto, McIntyre Research Found.
12. MCCALLUM, R. I.: Pneumoconiosis of Coal Miners in North East England, with Special Reference to the Durham Coalfield. *Brit. J. Ind. M.*, 9:99 (April) 1952.
13. MCCALLUM, R. I.: Pneumoconiosis and the Coalfields of Durham and Northumberland. *Trans. Instit. Mining Engrs.*, 113:97 Salisbury House, Finsbury Circus, E.E. 2, London 1952.
14. FLETCHER, C. M.: Epidemiological Studies of Coal Miners' Pneumoconiosis in Great Britain. *Arch. Ind. Health*, 11:29 (January) 1955.
15. GILSON, J. C., and KILPATRICK, G. G.: Management and Treatment of Patients with Coal-Workers' Pneumoconiosis. *Brit. M. J.*, 4920:994 (April) 1955.
16. HUGH-JONES, P.: X-Ray Classification, Epidemiology and Pathology of Coal Miners' Pneumoconiosis in Wales. *Symposium Coal Miners' Pneumoconiosis*, Elkins, West Virginia, Golden Clinic, (November) 1952, pp. 44-58.
17. FLETCHER, C. M.: Classification of Roentgenograms in Pneumoconiosis. *Arch. Ind. Health*, 11:17 (January) 1955.
18. FLETCHER, C. M., MANN, K. J., DAVIES, I., COCHRANE, A. L., GILSON, J. C., and HUGH-JONES, P.: The Classification of Radiographic Appearances in Coal Miners' Pneumoconiosis. *J. Faculty Radiologists*, 1:40 (July) 1949.
19. International Labor Office: Suggested International Scheme for the Classification of Radiographs in Some of the Pneumoconioses, *Proc. 3rd Intl. Conf. Experts on Pneumoconiosis*, February 28-March 10, 1950, 1:130-133, Geneva, I.L.O., 1953.
20. HARDING, H. E., and OLIVER, G. B.: Changes in the Lungs Produced by Natural Graphite. *Brit. J. Ind. M.*, 6:91 (April) 1949.
21. HARDING, H. E., and MASSIE, A. P.: Pneumoconiosis in Boiler Scalers. *Brit. J. Ind. M.*, 8:256 (October) 1951.
22. FLETCHER, C. M.: Coalworkers' Pneumoconiosis: So-called "Anthraco-Silicosis." *Ind. Hyg. Digest* 16:24 (September) 1952. (*Beit. z. Silikose-Forschung.*, Nos. 18-20:119-150, 1951. English and German.)
23. HEPPLESTON, A. G.: Coal Workers' Pneumoconiosis. *Arch. Ind. Hyg. & Occ. M.*, 4:270 (September) 1951.
24. GOUGH, J.: Pneumoconiosis in Coal Workers in Wales. *Occ. M.*, 4:86 (July) 1947.
25. GOUGH, J.: The Pathology of Pneumoconiosis. *Postgrad. M. J.*, 25:611 (December) 1949.
26. GOUGH, J., and WENTWORTH, J. E.: The Pathology of the Pneumoconiosis of Coalworkers in Wales. *Proc. 9th Int. Cong. Ind. M.*, 1948, London, pp. 661-665.
27. HEPPLESTON, A. G.: The Essential Lesion of Pneumoconiosis in Welsh Coal Workers. *J. Path. Bac.*, 5:453 (July) 1947.
28. DOYLE, H. N., and NOEHREN, T. H.: Pulmonary Fibrosis in Soft Coal Miners. *Public Health Bibliography Series No. 11*, Washington, D.C., U.S. Govt. Print. Off., 1954.
29. *Pneumoconiosis Abstracts*, New York, Pitman Publishing Corporation, 1:148, 1953.
30. *Pneumoconiosis Abstracts*, New York, Pitman Publishing Corporation, 2:171, 1953.
31. KERR, L. E.: Coal Workers' Pneumoconiosis: A Review of the Literature. In Preparation.
32. HARDY, H. L.: Medical Progress—Occupational Medicine. *New England J. M.*, 247:473 and 515 (September and October) 1952.
33. HAMLIN, L. E.: Anthracosilicosis Occurring in a Foundry Employee. *Arch. Ind. Hyg. & Occ. M.*, 7:339 (April) 1953.
34. SAYERS, R. R., BLOOMFIELD, J. J., DALLAVALLE, J. M., JONES, R. R., DREESEN, W. C., BRUNDAGE, D. K., and BRITTEN, R. H.: Anthracosilicosis Among Hard Coal Miners. *Pub. Health Bull. No. 221*, Washington, D.C., U.S. Govt. Print. Off., 1935.
35. SAYERS, R. R., and JONES, R. R.: Silicosis and Similar Dust Diseases. *Pub. Health Reports*, 53:1453 (August) 1938.
36. DREESEN, W. C., and JONES, R. R.: Anthracosilicosis. *J.A.M.A.*, 107:1179 (October) 1936.
37. FLINN, R. H., SEIFER, N. E., BRINTON, H. P., JONES, J. L., and FRANK, R. W.: Soft Coal Miners Health and Working Environment. *Pub. Health Bull. No. 270*, Washington, D.C., U.S. Govt. Print. Off., 1941.
38. CLARKE, B. G., and MOFFET, C. E.: Silicosis in Soft Coal Miners. *J. Ind. Hyg. & Toxicol.*, 23:176 (May) 1941.
39. JONES, R. H.: Pneumoconiosis Encountered in Bituminous Coal Miners. *J.A.M.A.*, 119:611 (June) 1942.
40. KIBBEY, C. H.: Pneumonia and Tuberculosis Among Industrial Workers and Their Dependents. *J.A.P.H.A.*, 27:555 (June) 1937.
41. GORDON, B., MOTLEY, H. L., THEODOS, P. A., and LANG, L. P.: Anthracosilicosis and Its Symptomatic Treatment. *West Virginia M. J.*, 45:125 (June) 1949.
42. THEODOS, P. A., GORDON, B., LANG, L. P., and MOTLEY, H. L.: Studies in the Clinical Evaluation of Disability in Anthracosilicosis. *Dis. Chest*, 17:249 (March) 1950.
43. MOTLEY, H. L., GORDON, B., LANG, L. P., and THEODOS, P. A.: Impairment of Pulmonary Function in Anthracosilicosis. *Arch. Ind. Hyg. & Occ. M.*, 1:133 (February) 1950.
44. WALL, N. M.: Anthracosilicosis, with Special Reference to Pulmonary Cavitation. *Amer. Rev. Tuberc. & Pulm. Dis.*, 71:544 (April) 1955.
45. MARTIN, J. E.: Coal Miners' Pneumoconiosis. *J.A.P.H.A.*, 44:581 (May) 1954.
46. FRIEDMAN, L. L.: Significant Case of Pneumoconiosis in a Soft-Coal Worker. *Arch. Int. M.*, 95:328 (February) 1955.
47. FRIEDMAN, L. L.: X-ray and Pathologic Features of Soft Coal Miners' Pneumoconiosis. *Symposium Coal Miners' Pneumoconiosis*, Elkins, West Virginia, Golden Clinic, (November) 1952, pp. 44-62.
48. ROSS, W. D., MILLER, L. H., LEET, H. H., and PRINCI, F.:

Emotional Aspects of Respiratory Disorders Among Coal Miners. *J.A.M.A.*, 156:484 (October) 1954.

49. MARK, L.: Lung Biopsy. *Symposium on Coal Miners' Pneumoconiosis*, Elkins, West Virginia, Golden Clinic, (November) 1952, pp. 62-71.

50. HEPPLESTON, A. G.: The Pathological Anatomy of Simple Pneumoconiosis in Coal Workers. *J. Path. Bac.*, 66:235 (July) 1953.

51. HEPPLESTON, A. G.: The Pathogenesis of Simple Pneumokoniosis in Coal Workers. *J. Path. Bac.*, 67:51 (January) 1954.

52. MCVITTIE, J. C.: Pneumoconiosis in Coal Miners. *Postgrad. M. J.*, 25:618 (December) 1949.

53. FLETCHER, C. M.: Some Problems in the Investigation of Coalworkers' Pneumoconiosis. *Proc. Conf. The Application of Scientific Methods to Industrial and Service Medicine.* Medical Research Council, London, H.M. Stationery Off., 1951, pp. 87-96.

54. STEWART, A., DAVIES, I., DOWSETT, L., MORRELL, F. H., and PIERCE, J. W.: Pneumoconiosis of Coal Miners: A Study of the Disease After Exposure to Dust Has Ceased. *Brit. J. Ind. M.*, 5:120 (July) 1948.

55. HEPPLESTON, A. G.: A Review of Pneumokoniosis and Dust Suppression in Mines. *Queensland Govt. Mining J.*, (August) 1949, pp. 444-448.

56. THEODOS, P. A.: Clinical Aspects of Coal Miners' Pneumoconiosis. *Symposium Coal Miners' Pneumoconiosis*, Elkins, West Virginia, Golden Clinic, (November) 1952, pp. 9-26.

57. HUGH-JONES, P.: Pulmonary Function Studies of Coal Miners in Wales, *Symposium Coal Miners' Pneumoconiosis*, Elkins, West Virginia, Golden Clinic, (November) 1952, pp. 71-82.

58. COCHRANE, A. L., FLETCHER, C. M., GILSON, J. C., and HUGH-JONES, P.: The Role of Periodic Examination in the Prevention of Coalworkers' Pneumoconiosis. *Brit. J. Ind. M.*, 8:53 (April) 1951.

59. FLETCHER, C. M.: The Clinical Diagnosis of Pulmonary Emphysema. An Experimental Study. *Proc. Roy. Soc. M., Sect. Exp. M. & Ther.*, 45:577 (September) 1952.

60. FLETCHER, C. M.: Function Tests and the Clinician. *Proc. Roy. Soc. M., Sect. Exp. M. & Ther.*, 46:538 (February) 1953.

61. GILSON, J. C.: Problems in the Physiological Assessment of Shortness of Breath. *Proc. Conf. The Application of Scientific Methods to Industrial and Service Medicine.* Medical Research Council, London, H.M. Stationery Off., 1951, pp. 101-107.

62. FLETCHER, C. M.: The Control of Coalminers' Pneumoconiosis by Means of Periodical X-ray Examinations. *Proc. 3rd Intl. Conf. Experts on Pneumoconiosis*, February 28-Mar. 10, 1950 2:150 Geneva, I.L.O., 1953.

63. DAVIES, I., FLETCHER, C. M., MANN, K. J., and STEWART, A.: Radiological Progression in Coalminers' Pneumoconiosis. *Proc. 9th Int. Cong. Ind. M.*, 1948, London, pp. 773-778.

64. FLETCHER, C. M., and OLDHAM, P. D.: The Problem of Consistent Radiological Diagnosis in Coal Miners' Pneumoconiosis: An Experimental Study. *Brit. J. Ind. M.*, 6:168 (July) 1949.

65. Medical Research Council, Industrial Pulmonary Diseases Committee: Recommendations for the Standardization of Radiographs in Industrial Pulmonary Diseases. *Brit. J. Radiol.*, 23:500 (August) 1950.

66. GOUGH, J., JAMES, W. R. L., and WENTWORTH, J. E.: A Comparison of the Radiological and Pathological Changes in Coalworkers' Pneumoconiosis. *J. Faculty Radiologists*, 1:28 (July) 1949.

67. MCCALLUM, R. I.: The Radiographic Classification of Pneumoconiosis. *6th Conf. on Silicosis*, February 1-3, 1954, Toronto, McIntyre Research Foundation.

68. Pneumoconiosis Research Unit of the Medical Research Council: Notes on the Classification of Radiographs of Coal Workers' Pneumoconiosis and the Use of Standard Films. Mimeographed material distributed by the P.R.U., Llandough Hospital, Penarth, South Wales.

69. COCHRANE, A. L., DAVIES, I., and FLETCHER, C. M.: Entente Radiologique: A Step Towards International Agreement on the Classification of Radiographs in Pneumoconiosis. *Brit. J. Ind. M.*, 8:244 (October) 1951.

70. FLETCHER, C. M., and OLDHAM, P. D.: The Use of Standard Flms in the Radiological Diagnosis of Coal Workers' Pneumoconiosis. *Brit. J. Ind. M.*, 8:138 (July) 1951.

71. COCHRANE, A. L., and FARLAND, L. H.: Observer Error in the Interpretation of Chest Films. *Lancet*, 263:505 (September) 1952.

72. NEWELL, D. J., and MCCALLUM, R. I.: A Comparison of Three Film Sizes in the Radiological Diagnosis of Pneumoconiosis. *J. Faculty Radiologists*, 6:67 (July) 1954.

73. GOUGH, J.: The Pathological Diagnosis of Emphysema. *Proc. Roy Soc. M., Sect. Exp. M. & Ther.*, 45:576 (September) 1952.

74. GILSON, J. C., and HUGH-JONES, P.: Lung Function in Coalworkers' Pneumoconiosis. *Medical Research Council, Special Report Series #290*, London, H. M. Stationery Off., 1955.

75. GILSON, J. C.: The Disability of Coal Workers in Wales. *The Second Symposium on Coal Workers' Pneumoconiosis*, Elkins, West Virginia, Golden Clinic, Early Publication.

76. Medical Research Council. Special Report Series No. 244: Chronic Pulmonary Disease in South Wales Coal Miners. II: Environmental Studies. A. - Report by the Committee on Industrial Pulmonary Disease. B.-G. Reports on Physical, Chemical and Petrological Studies. London, H.M. Stationery Off., 1943.

77. Medical Research Council. Special Report Series No. 250. Chronic Pulmonary Disease in South Wales Coal Miners. III.: Experimental Studies. A.-Report by the Committee on Industrial Pulmonary Disease. B.-The Mineral Content of the Lungs of Workers from the South Wales Coal Field. C.-The Estimation of Coal and Aluminum in Dried Lung. D.-Tissue Reactions Produced Experimentally by Selected Dusts from South Wales Coal-Mines. E.-The Solubility of Dusts from South Wales Coal-Mines. London, H.M. Stationery Off., 1945.

78. JENKINS, T. H.: Medico-mining Aspects of Pneumoconiosis in South Wales. *Colliery Guardian*, 176:479 (April) 1948.

79. KING, E. J.: Pneumoconiosis Research in Great Britain. *Proc. Conf. Silicosis and Aluminum Therapy*, January 29-31, 1951, Toronto, McIntyre Research Foundation, pp. 68-86.

80. HEPPLESTON, A. G.: Changes in the Lungs of Rabbits and Ponies Inhaling Coal Dust Underground. *J. Path. Bac.*, 67:349 (April) 1954.

81. DAVIES, C. N.: Dust Sampling and Lung Disease. *Brit. J. Ind. M.*, 9:120 (April) 1952.

82. ROACH, S. A.: Measuring the Workers' Environment. *Brit. J. Ind. M.*, 11:54 (January) 1954.

83. OLDHAM, P. D., and ROACH, S. A.: A Sampling Procedure for Measuring Industrial Dust Exposure. *Brit. J. Ind. M.*, 9:112 (April) 1952.

84. ROACH, S. A.: A Method of Relating the Incidence of Pneumoconiosis to Airborne Dust Exposure. *Brit. J. Ind. M.*, 10:220 (October) 1953.

85. OLDHAM, P. D.: The Nature of the Variability of Dust Concentrations at the Coal Face. *Brit. J. Ind. M.*, 10:227 (October) 1953.

86. WRIGHT, B. M.: The Importance of the Time Factor in the Measurement of Dust Exposure. *Brit. J. Ind. M.*, 10:235 (October) 1953.

87. DAVIES, I., and MANN, K. J.: The Radiological Appearance of Coal Miners' Pneumoconiosis in South Wales. *Proc. 9th Int. Cong. on Ind. M.*, 1948, London, pp. 768-772.

88. MANN, K. J.: A Radiological Study of the Relationship Between Tuberculosis and Pneumokoniosis in Coal Miners. *Thorax*, 6:43 (March) 1951.

89. JAMES, W. R. L.: The Relationship of Tuberculosis to the Development of Massive Pneumokoniosis in Coal Workers. *Brit. J. Tuberc. Dis. Chest*, 48:89 (April) 1954.

90. COCHRANE, A. L.: Tuberculosis and Coalworkers' Pneumoconiosis. *Brit. J. Tuberc. Dis. Chest*, 48:274 (October) 1954.

91. COCHRANE, A. L., COX, J. G., and JARMAN, T. F.: Pulmonary Tuberculosis in the Rhondda Fach. *Brit. M. J.*, ii: 843 (October) 1952.

92. COCHRANE, A. L., COX, J. G., and JARMAN, T. F.: A "Follow-up" Chest X-ray Survey in the Rhondda Fach. *Brit. M. J.*, i: 371 (February) 1955.

93. ATTYGALLE, D., HARRISON, C. V., KING, E. J., and MOHARTY, G. P.: Infective Pneumoconiosis. *Brit. J. Ind. M.*, 11:245 (October) 1954.

94. National Coal Board, Scientific Department, Annual Report 1954: Research on Medical and Human Problems. Hobart House, Grosvenor Place, London S.W.1, England, p. 3.

95. SANDER, O. A.: Emphysema and Its Relationship to Dust Exposure. Guest Editorial, *J.A.M.A.*, 158:1526 (August) 1955.

96. LAUENNE, F.: The Electrocardiogram in Coalminers' Silicosis. *Proc. 9th Int. Cong. Ind. M.*, 1948, London, pp. 713-716.

97. THOMAS, A. J.: The Heart in the Pneumoconiosis of Coal Miners. *Brit. Hrt. J.*, 10:289 (October) 1948.

98. THOMAS, A. J.: Right Ventricular Hypertrophy in the Pneumoconiosis of Coal Miners. *Brit. Hrt. J.*, 13:1 (January) 1951.

99. WELLS, A. L.: Cor Pulmonale in Coalworkers' Pneumoconiosis. *Brit. Hrt. J.*, 16:74 (January) 1954.

100. GILSON, J. C., and OLDHAM, P. D.: Lung Function Tests in the Diagnosis of Pulmonary Emphysema. The Use of Discriminant Analysis. *Proc. Roy. Soc. M., Sect. Exp. M. & Ther.*, 45: 584 (September) 1952.

101. HUGH-JONES, P.: A Simple Standard Exercise Test and Its Use for Measuring Exertion Dyspnea. *Brit. M. J.*, 1:65 (January) 1952.

102. BATES, D. V.: The Assessment of Respiratory Function. *Proc. Roy. Soc. M., Sect. Exp. M. & Ther.*, 46:535 (February) 1953.

103. KENNEDY, M.C.S.: A Practical Measure of the Maximum Ventilatory Capacity in Health and Disease. *Thorax*, 8:73 (March) 1953.

104. KENNEDY, M.C.S.: The Assessment of Respiratory Function. *Proc. Roy. Soc. M., Sect. Exp. M. & Ther,* 46:539 (February) 1953.

105. MCKERROW, C. B.: Assessment of the Mechanical Function in Ventilation. *Proc. Roy. Soc. M., Sect. Exp. M. & Ther.,* 46:532 (February) 1953.

106. MOTLEY, H. L., LANG, L. P., and GORDON, B.: Pulmonary Emphysema and Ventilation Measurements in 100 Anthracite Coal Miners with Respiratory Complaints. *Am. Rev. Tuberc.,* 59:270 (March) 1949.

107. MOTLEY, H. L., LANG, L. P., and GORDON, B.: Studies on the Respiratory Gas Exchange in One Hundred Anthracite Coal Miners with Pulmonary Complaints. *Am. Rev. Tuberc.,* 61:201 (February) 1950.

108. MOTLEY, H. L.: Evaluation of Pulmonary Function Impairment by Physiological Studies on 400 Unselected Cases of Hard and Soft Coal Miners with Respiratory Complaints. *Proc. Conf. Silicosis and Aluminum Therapy,* Jan. 29-31, 1951, Toronto, McIntyre Research Foundation, pp. 49-67.

109. THEODOS, P. A.: Treatment of Coal Miners' Pneumoconiosis. *Symposium Coal Miners' Pneumoconiosis,* Elkins, West Virginia, Golden Clinic, (November) 1952, pp. 83-95.

110. MOTLEY, H. L., LANG, L. P., and GORDON, B.: Use of Intermittent Positive Pressure Breathing Combined with Nebulization in Pulmonary Disease. *Am. J. Med.,* 5:853 (December) 1948.

111. KENNEDY, M.C.S.: Cortisone in Pneumoconiosis With and Without Reversible Bronchoconstriction. *Lancet,* 266:77 (January) 1954.

112. MIALL, W. E., OLDHAM, P. D., and COCHRANE, A. L.: The Treatment of Complicated Pneumoconiosis with Isoniazed. *Brit. J. Ind. M.,* 11:186 (July) 1954.

113. COCHRANE, A. L.: Methods of Investigating the Connexion Between Dust and Disease. *Proc. Conf. The Application of Scientific Methods to Industrial and Service Medicine.* Medical Research Council, London, H. M. Stationery Off., 1951, pp. 97-100.

114. Editorial: Symposium on Dust Sampling in the Control of Pneumoconiosis. *Brit. J. Ind. Med.,* 10:217 (October) 1953.

"That Particular Patient"

THE CONNECTICUT "Code of Ethics Relating to Occupational Medicine" states that the industrial physician may "treat minor disorders which temporarily interfere with the person's comfort or ability to complete a work-day or seek other aid or which are of such a nature that *that particular patient* would not be expected to seek other medical attention." I place particular emphasis on the words "that particular patient." Perhaps it should be more clearly stated "that particular employee." In industry, we are dealing with all sorts and kinds of individuals. The executive may come to us with a fairly trivial condition, and we know he is financially able to have this condition cared for by a private physician. We also know that he has the intelligence to understand the problem, and once we have explained it to him, will gladly turn to his personal physician for advice and care. On the other hand, we frequently see employees whose mental and educational background is such that we know well that they are not going to seek aid from a private physician. This is sometimes because they do not realize the serious potentialities or more often because their pay won't stretch that far. I feel that we, as industrial physicians, are justified in going considerably further with our treatment of non-occupational illness and injuries in this type of individual, and I believe that is what is meant in the Code of Ethics by "that particular patient." If we do not carry out treatment for some of these minor ailments, they may well become a major illness and result in loss of time or lost efficiency or even in serious disability. As industrial physicians, we are concerned with "the promotion of healthful well-being of individuals or groups on authorization of an employer as a third party who has a valid interest or intervenes." I feel that we would be derelict in our duty if, in our responsibility to the employee, our patient, or to the employer, we did not treat minor non-occupational conditions which we knew were going untreated unless we took care of them. We who have been in private practice should have little difficulty in distinguishing between the various conditions and the individual employees whom we should treat and those we should insist be treated by their personal physicians.

—From an Address entitled "The Problems Confronting the Industrial Physician in the Handling of Non-Occupational Illness and Injuries," by JOHN F. KILGUS, JR., M.D., Chief, Health Services for State Employees, Connecticut State Department of Health, Hartford, given as part of a Postgraduate Course in Occupational Medicine under the auspices of Yale University School of Medicine, Department of Public Health, Section on Occupational Health, Bridgeport Hospital, Bridgeport, Connecticut, January, 1955.

Gall-Bladder Problems

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THERE ARE few benign conditions that present more potentialities for serious complications than gall-bladder disease and few surgical operations that require more technical skill and more accurate identification of anatomical structures than the operation of cholecystectomy. One false move may result in a fatality or may inflict a ductal injury, which will require a further surgical attempt to correct, often unsuccessful.

Technical difficulties are more frequently encountered when there has been a prolonged history of cholecystitis or after the complications of ductal obstruction, cholangitis or acute gall-bladder infection have developed.

Delay in surgery for gall-bladder disease may present, therefore, complications of such a serious nature that the patient may never fully recover, although successfully operated upon.

We are firmly convinced, because we have many times encountered serious complications as a result of delayed surgery upon the gall-bladder, that gall-stones when detected should be removed by cholecystectomy.

Cholecystectomy under favorable conditions presents the minimum of technical difficulties and with accurate dissection and identification of structures, surgical tragedies should not occur.

Radiographic Aids in Diagnosis

FACILITIES are available for the accurate diagnosis of suspected gall-bladder disease. Perfection in the technique of visualization of the gall-bladder by the use of an opaque medium, has resulted in the detection of obscure pathological conditions and in stone identification. A gall-bladder that does not visualize under favorable conditions by cholecystography can be considered a pathological one. To be effective one must be certain that the patient takes the medication, does not vomit it, and has no diarrhea.

Cholecystography does not visualize the extra hepatic bile ducts, and the need for an opaque medium that will visualize these ducts has long been evident.

Oral cholangiography by Telepague, as reported by Twiss and Associates,[3] visualized the bile ducts in 85% of the post cholecystectomy patients. Recently, a contrast medium has been developed which, when given intravenously, opacifies the extra hepatic bile ducts. This has been described in a preliminary report by Berk and Associates.[4] The concentration in the bile by which it is excreted is greater than in the blood. Only a small amount is excreted by the kidneys. They report the common duct could be detected in most cases and both hepatic ducts and biliary ducts were frequently seen.

Glenn and Associates,[5] have reported upon the use of cholografin in the visualization of the extra hepatic bile ducts in the cholecystectomized paient. It is a non-operative method for evaluating the extra hepatic biliary ducts in the patient with the postcholecystectomy syndrome. A communication from Dr. Frank Glenn[5] says: "We have examined 121 patients who have had persistent symptoms, or the reappearance of symptoms, after cholecystectomy. The common duct was satisfactorily visualized in 105, or 86.8%. The most frequent evidence of non-visualization was jaundice and impaired liver function. Abnormalities of the biliary ductal system were demonstrated in 40 patients, including: cystic duct remnan, 18; calculi, 11; adhesive bands and strictures, 11. In 20 patients the only abnormality demonstrated was a dilation of all or a portion of the ductal system to 7 millimeters in diameter or more. We believe this is significant. Fifteen of the 121 patients had no abnormality of the ductal system. In a solitary, obese individual without signs of jaundice and with normal liver function, the common duct was not visualized. Twenty-six of these 121 patients were found by additional examinations to have duodenal ulcer, hiatus hernia, pancreatitis or renal disease that might wholly or in part explain their symptoms."

Liver Function Tests

LIVER FUNCTION—tests have aided materially in the differential diagnosis between ductal obstruction and hepatic jaundice. The clinical evaluation of the patient, relating to history, onset of jaundice and physical examination cannot be disregarded. A deep jaundice and an enlarged palpable non-tender gall-bladder, with acholic stools and no urobilinogen in them, are indicative of cancer of the head of the pancreas. A jaundice of less intensity and a non-palpable gall-bladder suggests a calculous ductal obstruction and a contracted fibrotic gall-bladder.

The icteric index is the base line for the estimation of the degree and progress of jaundice.

The alkaline phosphatase is elevated in most cases of ductal obstruction.

When there is a speedy response of the prolonged prothrombin by vitamin K therapy and

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there is an associated normal serum protein and a balanced albumin globulin ratio, a favorable evaluation can be made as to the patient's ability to withstand surgery (Walters).[6]

A prolonged prothrombin that does not respond to vitamin K therapy is indicative of severe cellular damage of the liver.

Zollinger,[7] states that the cephalin flocculation test is elevated in 80% of the cases of medical jaundice. The thymol turbidity is not so accurate, being elevated in 40% of the cases of medical jaundice and in 33% of the cases of obstructive jaundice.

Jaundice of over one month will produce secondary liver damage, so the value of liver tests must be evaluated, accordingly. Pancreatitis is frequently associated with gall-bladder disease and the blood amylase is elevated early in most acute gall-bladder infections.

Effects of Ductal Obstruction

BLOCKAGE to the flow of fluid of any tubular organ will result in back pressure, tubular dilatation, and distortion of the architecture of the structure. This is notably so in urinary obstruction which results in a progressive hydronephrosis and severe kidney damage.

The architecture of the biliary tree is similarly affected. Obstruction to the flow of bile by stone or inflammation, results in dilatation of all the bile ducts proximal to the site of the obstructing agent. The peripheral ducts and intercellular canaliculi of the biliary tree eventually become dilated, sacculated, and the terminal ducts often rupture and become clubbed. The expanding ducts produce pressure upon the surrounding parenchyma with degeneration and liver atrophy. It is in reality a hydrohepatosis. This process of the effect of bile duct obstruction has been well described by Sanders.[8]

Stasis of this nature with desquamation of epithelium and accumulation of debris, may result in stone formation, which may later produce ductal obstruction after surgery. Inadequate drainage and infection from this persistent intrahepatic pathology may result in recurrent attacks of cholangitis.

One need only to operate upon a patient with deep jaundice, with a small contracted fibrotic gall-bladder, and a dilated common duct, containing mushy granular material, to be convinced of the serious error in judgment in advising delayed surgery in gall-bladder disease.

The Non-Calculous Gall-bladder

AS ONE extends his experience in gall-bladder surgery, the less he is inclined to remove the non-calculous gall-bladder or the gall-bladder that shows visualization but slow and retarded emptying. The results are disappointing. When such gall-bladders are removed, solely upon the basis of pain and distress, without cholecystographic evidence of disease and without gross evidence of pathology or the presence of stones on exploration, there is likely to be a recurrence of the distress, a postoperative dyskinesia. It is possible, in such cases, that small stones in the common duct were present and overlooked; but this is unlikely without gross evidence of disease of the gall-bladder, or of the biliary tract at the time of operation. Before operating with such questionable symptomatology, other organic disease, like pancreatitis, posterior wall duodenal ulcer or functional conditions relating to pylorospasm, irritable colon or ampullary dyskenesia should be carefully considered.

We, like Allen,[9] think little of the necessity of a microscopic slide to make a diagnosis of cholecystitis. Even when cholesterosis is found, cholecystectomy has frequently failed to relieve the patient of symptoms.

Acute Cholecystitis

ACUTE gall-bladder disease is largely an emergency but not in the sense of a ruptured ulcer or an acute appendicitis. A period of time can be taken to prepare the patient and to observe the progress of the disease. Indications for immediate surgery are related to an increase of local tenderness and muscle spasm, to a rise in the temperature and increased white blood count.

The danger of a spreading infection is not a reality. It is more likely to occur in the prolonged period of waiting. The infection theory has not been substantiated, as usually the acute process is due to an impacted cystic duct stone, or to a chemical reaction from pancreatic regurgitation or concentrated bile. This process may not resolve during watchful waiting but frequently goes on to gangrene, perforation, abscess formation or peritonitis. More pitfalls result from protracted observation than from prompt surgery, after a short period of preparation and observation.

When the acute gall-bladder ruptures it will be usually either into the liver or into the surrounding peritoneal structures, forming a localized hepatic abscess or a pericholecystic abscess. It rarely ruptures into the free peritoneal cavity as it is walled off by the duodenum, transverse colon, hepatic flexure of the colon and the liver. We have observed in acute cholecystitis an incidence of about 10 to 12% leakage or perforation.

We have seen many gall-bladders that were very gangrenous or had gangrenous areas, that recovered without complications following cholecystectomy. Most of the perforations produced no more serious complications than a pericholecystic abscess or a large necrotic area in the gall-bladder bed. These recovered with adequate drainage of the abscessed space.

In five cholecystostomies for acute cholecystitis in patients 78 to 84 years of age, two had to subsequently have a cholecystectomy.

We have had five perforations into a viscus that required operation because of bowel obstruction. Three eroded into the duodenum and produced obstruction in the lower ileum, which were relieved by operation. Two perforated into the colon, with subsequent extraction of an obstructing stone from the rectum.

Cholecystic duodenal fistulas are frequently not recognized until a gall stone is found to be the factor in a small bowel obstruction. They usually give few symptoms as the gall-bladder has emptied itself of stones into the duodenum by the formation of a non-surgical cholecystoduodenostomy. A good stoma permits good drainage and no cholangitis. It is only when the stoma is small and the gall-bladder cannot drain itself of residual stones, that symptoms persist and surgery is required.

I believe the gall-bladder should be removed rather than drained except in a few instances where age, cardiac conditions or some other systemic condition or unfavorable local condition demands only the least amount of surgical trauma. That the operation is not as difficult as the usual cholecystectomy, is evident to any surgeon of experience. Edema aids in finding the planes of dissection, which is often difficult in chronic cholecystitis because of dense adhesions.

The common duct should not be explored, except when a stone is palpated or it is very dilated. The operative site must always be drained. We drain through a stab wound, thus permitting closure of the incision without a drainage tube. Drainage through the operative incision may permit burrowing of bile and drainage fluids between the layers of the closed abdomen, prevent healing, and weaken the abdominal wall.

Exploration of the Common Bile Duct

IT IS NOT our opinion that most common duct stones have progressed from the gall-bladder through the cystic duct into the common duct. The cystic duct is usually too small for any but very small stones to pass through it. The size of the usual stone or stones in the common duct is too large to have been passed through the cystic duct. Stones are usually formed in the common and hepatic ducts from the same pathologic process that produced them in the gall-bladder. Time and again stones are found in the common and hepatic ducts when the cystic duct was so small that a bird seed could not possibly pass through it. It must be assumed, therefore, that most stones in the common and hepatic ducts are the result of infection in these structures.

We, therefore, believe there is a greater need to explore the common bile duct for undetectable stones. We have found no increase in morbidity or mortality from this procedure. The criteria for opening the common bile duct are well founded, but I am sure there are many instances where these indications are not present and yet there are small stones at the ampulla which if not removed will ultimately obstruct the duct. I believe that since we have standardized the operation of cholecystectomy and can expose the extra hepatic bile ducts with impunity, the common bile duct should be explored more frequently. We are constantly exploring more of these ducts every year and frequently find small stones or partial stenosis at the ampulla. I think these unrecognized and unremoved stones are the major factor in unsuccessful cholecystectomy. We open approximately 37% of common bile ducts for exploration and have found stones in three-fourths of them. Passage of a scoop or dilator through the common duct is best done from the left side of the patient with the duodenum mobilized, retracted to the left, which exposes and straightens out the pancreatic portion of the common bile duct. The scoop should not be forcefully passed through the ampulla. If obstructed, a small dilator should be carefully guided through it and gradually dilated to a point where a scoop can be passed through it freely into the duodenum. The making of a false passage through excess pressure should be guarded against.

In rare instances a stone lodged in the ampulla can not be extracted through the duct and it becomes necessary to open the duodenum, split the ampulla slightly, and extract the stone. This can be done with impunity. We have done it many times without a duodenal leak. The duodenum is opened longitudinally and closed transversely.

In all explorations of the common duct, the intrahepatic bile ducts as well as the extra hepatic ducts, should be thoroughly irrigated with water through an inserted catheter, until all washings are clear. Frequently small stones are washed down from the intra hepatic ducts, which again is proof that stones form in the bile ducts as well as in the gall-bladder.

In the event the ampulla is fibrotic and dilates with difficulty we have frequently used the long T-tube, and left it in for several weeks, with gratifying success. It assures against recontraction during the period of reaction following dilatation.

Occasionally it is wise to do duct visualization on the operating table. This is to be commended. Many use it routinely. We believe that the duct can be explored at operation, and that operative cholangiography is rarely necessary.

Biliary Dyskinesia

THE POSTCHOLECYSTECTOMY syndrome may be the result of spasm of the sphincter of Oddi or to overlooked stones, cystic duct stump, pancreatitis, or duodenal ulcer. Biligrafin may be valuable in detecting overlooked stones or ductal obstruction; there is an error of 15 to 20% in which visualization is indefinite or not present. In any event, if the symptoms persist, we believe the common duct should be surgically explored.

The common duct should be opened and carefully investigated for stones. A 4-mm. scoop should be passed into the duodenum and the duct carefully palpated over it. If in doubt, the duodenum should be opened and the ampulla inspected. If the ampulla is small the anterior portion of the sphincter of Oddi can be incised. The mucosa of the duodenum and the common duct should be sutured. This prevents hemorrhage and stenosis, and keeps the sphincter open.

Choledochoduodenostomy

CHOLEDOCHODUODENOSTOMY is an operation of great merit for ductal obstruction at the am-

pulla which can not be dilated. It is effective in fibrosis from pancreatitis, ampulary stenosis and sometimes for carcinoma of the head of the pancreas. A wide stoma will not produce reflux of duodenal contents into the liver ducts with resulting cholangitis. It will drain well. Water seeks its level, so does bile. Cholangitis comes from stenosis, obstruction and back pressure. The merits of this procedure have been discussed and advocated in selected cases by Sanders.[6] We have used it frequently and found it effective.

Cancer of the Gall-bladder

THE INCIDENCE of this complication is very low. Probably not more than 2% in our experience, but recorded by some as 4% to 5%. We have always found it associated with a calculous gall-bladder. No cases have been cured by surgery. We have removed large wedges of liver in continuity with the gall-bladder. This adds little to the post-operative extension of life. The liver is spongy, and although all visible cancer is removed, it soon recurs. Right hepatectomy has been performed without cure. It is a formidable operation, accompanied by excessive mortality and will not be accepted as a standard procedure for cancer of the gall-bladder.

The incidence of cancer of the gall-bladder is higher than the mortality from gall-bladder surgery, and cholecystectomy for stones is an excellent prophylactic measure against the development of cancer.

Heart Disease and Gall-bladder Disease

IN MANY instances chronic gall-bladder disease or ductal obstruction is associated with chronic myocardial or vulvular heart disease or becomes a problem in one who had previously been the victim of a coronary occlusion. We have found that these patients withstand surgery remarkably well and apparently have a greater heart reserve after they have been relieved of pain, gas, and indigestion. We have removed some infected gall-bladders associated with advanced heart disease with surprisingly good results upon the heart. Many functional disorders are relieved entirely. The relationship has been mentioned for years and favorable results have been experienced and reported by others.

Obstructions in the Head of the Pancreas

OBSTRUCTIONS from lesions in the head of the pancreas are usually malignant, suggested clinically by an enlarged palpable gall-bladder, painless progressive jaundice, and acholic stools without urobilinogen. Widening of the curve of the duodenum is radiologically suggestive.

Radical resection of the head of the pancreas has not proved more servicable than conservative operations. The mortality is high, and in about one-fifth of the patients the lesions prove to be benign. Biopsy is uncertain and dangerous because of pancreatic fistula.

Radical operation should be done for cancer of the ampulla of vater. Our longest survival was four years and eight months; death was due to another cause. Autopsy was not obtained.

Summary

EARLY operation in gall-bladder disease is urged. Complications result in hazards and uncertain results.

Cholecystography and cholangiography are discussed.

Means for early diagnosis of gall-bladder disease are available.

Visualizing processes are becoming clinically applicable for biliary tract delineation.

Liver functional tests for differential diagnosis between hepatitis and ductal obstruction are discussed.

The importance of the clinical history and physical examination must be correlated with any laboratory data.

The effects of ductal obstruction upon the intrahepatic bile ducts and liver are extensive and persistent, and are described.

The acute gall-bladder and indications for immediate or delayed surgery are discussed. The local condition relating to drainage or removal is mentioned as a guide in decision.

The relation of gall-bladder disease to heart disease, and to malignancy is treated in some detail.

Some opinions concerning surgery of the common bile duct are offered, and the value of anastomosis of the duct to the duodenum is presented.

Palliative surgery is recommended for cancer of the head of the pancreas.

(1612 Professional Building.)

References

1. TWISS, J. RUSSELL, BERABAUM, S. A., GILLETTE, LEE, and POPPEL, M. H.: "Postcholecystectomy: Oral Cholangiography—A Preliminary Report." *Am. J. M. S.*, April, 1954.

2. BERK, J. E., KARNOFSKY, R. E., SHAY, H., and STAUFFER, HERBERT M.: "Intravenous Cholecystography and Cholangiorgraphy—Report of Preliminary Observations." *Am. J. M.S.*, 227:361 (April) 1954.

3. GLENN, FRANK, EVANS, JOHN, HILL, MALCOLM, and MCCLENAHAN, JOHN: "Intravenous Cholangiography." *Ann. Surg.*, 140:600 (October) 1954.

4. WALTERS, WALTMAN: "Obstructive Jaundice—Its Diagnosis and Treatment." *Am. Surg.*, 20:909 (September) 1954.

5. ZOLLINGER, ROBERT M., and SABERG, R. G.: "Indications for Surgery in Jaundiced Patients." *J. Indiana State M. A.*, 40:485 (June) 1953.

6. SANDERS, R. L.: "The Gall Stone Problem." *J. Missouri State M. A.*, 49:733 (September) 1952.

7. ALLEN, A. W.: "The Diagnosis and Treatment of Stones in the Common Bile Duct." *Surg., Gynec. & Obst.*, 62: 347 (February, No. 2a) 1936.

8. MUNHOLLAN, HARRY, REED, GEORGE, and MULHOLLAND, JOHN H.: "Delayed Operative Management of Acute Cholecystitis." *J.A.M.A.*, 135:1570 (August 28) 1954.

An Appraisal of the Periodic Health Examination

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THE BROAD acceptance by industry of the principle that disease can be detected early through periodic health examination, and disability prevented by the prompt treatment of disorders so discovered, makes it essential for those engaged in this work to have unequivocal evidence that the principle is sound.

While it appears self-evident that the detection of disease is the first step in its eradication, and that the earlier this is attempted, the simpler the problem, we physicians properly cannot expect our confreres in the world of business to accept this on faith. It is our responsibility to demonstrate both the accomplishments and the limitations of periodic health examinations. It appears to us that a rather formidable superstructure has been built on a somewhat inadequate foundation, in that industry has widely accepted the periodic health examination program somewhat before we have provided convincing evidence of its value. A symposium such as this provides, therefore, a valuable opportunity to examine the soundness of our position in this matter of medical importance.

Methods

THE METHODS described are those employed in the Diagnostic Clinic of the University of Pennsylvania. This Clinic, opened three years ago, is a staff organization, housed in the Gates Pavilion of the Hospital of the University of Pennsylvania, in which staff members function if they so desire.

The basic health examinations and diagnostic studies are carried out by members of the staff of the Departments of Internal Medicine and Surgery, while other examinations are made by consultants from various specialty groups. The Clinic has, in general, a two-fold purpose: the diagnostic study, largely on an ambulatory basis, of patients referred by outside physicians, and the conduct of periodic health examinations of various industrial, professional and business groups. The work of the Clinic is about evenly divided between these two activities.

The periodic health examination program, which is the subject of this report, involves at present nearly 1000 individuals who are examined on an annual or biennial basis. These individuals are members of mercantile companies, manufacturing concerns, banks, and publishing and law firms. Hence, their occupations are extremely varied but in general are executive in nature. The average age of the examinees is 50 years, and 97% are men. The examinations are on a voluntary basis except in one company. Of the individuals offered the examinations only 4% declined.

The reporting of the results of examination varies according to the wishes of the company concerned. Where there is a plant physician, the original reports are made available to him; in some instances he receives a copy of the report sent to the examinee's private physician; in other instances the original communication is sent directly to him with a copy to the private physician. In a few companies no information is requested by them from the Clinic, and responsibility is placed entirely upon the individual and his private physician to carry out therapeutic or other suggestions. A number of firms request that in those situations where the medical problems of an employee are of direct concern in company planning, the results of examinations be reported by the Director of the Clinic to the President of the company on a strictly confidential basis. In every instance where this policy exists, the examinees agree to it in writing prior to the examination.

In many organizations examinations are made annually, in others every 18 months, in some they are biennial, with the stipulation that annual examinations are available to those in whom significant medical problems exist. We have had no organizations which have discontinued the examinations once they have been started, and only a small percentage of individuals, not exceeding 5%, decline to avail themselves of subsequent examinations.

The initial examination is carried out by an internist; all examiners have completed medical residency, the great majority being Board certified. For this examination, between one and one and a half hours are consumed, three-quarters of an hour being devoted to history-taking, and approximately half an hour to the physical examination. The laboratory work consumes about

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one additional hour, including the necessary time spent in preparing for examinations.

The extent to which the examiner delves into personal matters such as intra-familial relationships, tensions and anxieties centering about occupation, habits of work, recreation, drinking, etc., varies rather widely. The more mature the examiner, the more emphasis he is apt to place on these considerations, and the more detail he is able to elicit from the examinee.

The following laboratory tests are performed on all examinees:

Hemoglobin, white and differential blood counts, urinalysis, two-hour postprandial blood sugar, serologic tests for syphilis, electrocardiogram and chest x-ray examination. All individuals 40 years of age or over are given a proctosigmoidoscopy. This is the only examination regularly made which depends upon the age of the individual. Where colonic polyps are observed, they are removed for biopsy at the time of examination and fulgeration of the base of the polyp is carried out. In the occasional instance where the large size of the polyp precludes its entire removal in the course of biopsy, prompt excision of the remaining polypoid tissue is recommended. All individuals in whom polyps are found, are subsequently studied by barium enema in which the double contrast technique is used in an effort to detect lesions beyond the reach of the sigmoidoscope.

In addition to the basic studies enumerated above, each examiner has carte blanche to request whatever additional studies he deems indicated, and this is done, according to the analysis of our records, in approximately 60% of the examinees.

Upon completion of the examination, each record is reviewed and abstracted, and on the basis of the recorded diagnoses, is placed in one of the four following groups:

Group I: Newly discovered disease.
Group II: Known disease.
Group III: Minor defects.
Group IV: No defects.

It is obvious that a given individual with multiple diagnoses may be included in any or all of the first three groups. In order to insure uniformity in the classification of patients, the Director of the Clinic, in every case, carries out the final evaluation of the records.

A follow-up interview with the examinee, in which the examining physician discusses and interprets the results of the study, is not a regular feature of this program, although it is done in isolated instances. While this is a desirable feature of the examination it was omitted to minimize the time required of both the physician and examinee, and it was felt that such interviews could well be reserved for the private physician. No mechanism exists in our Clinic for obtaining follow-up information from the patients prior to their next scheduled examination, at which time an effort is made to determine what steps have been taken to carry out recommendations originally made.

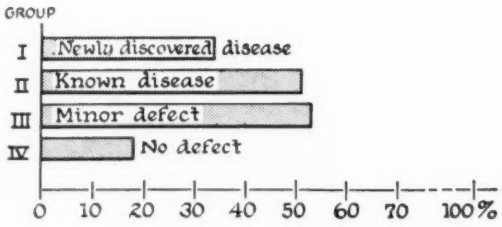

Fig. 1.
Health status of 750 individuals.

Subsequent examinations are, so far as possible, carried out by the physician making the initial examination. While this presents certain advantages both to the examiner and the examinee, it is felt by many that subsequent examinations, when made by a different examiner, are apt to be more thorough since his unfamiliarity with the patient, prompts him to be more painstaking.

Results

THE RESULTS of 750 initial examinations are indicated in Fig. 1.

The distribution by body systems of newly discovered diseases (Group I) are listed in Fig. 2. Cardiovascular, gastro-intestinal and metabolic disorders constituted 70% of the newly discovered diseases. Of the cardiovascular diagnoses, essential hypertension accounted for 85%. Blood pressure readings consistently 160 95 or over were considered to place the individual in this category. Coronary artery disease with early angina, made up an additional 7% of the diagnoses. The remainder included such entities as occlusive peripheral vascular disease, paroxysmal auricular fibrillation, and the Wolf-Parkinson-White syndrome.

Among the gastro-intestinal diseases, the most frequently found lesion was the asymptomatic colonic polyp. These occurred in 60% of this group. The great majority were ademomatous in type, and in one instance carcinomatous change

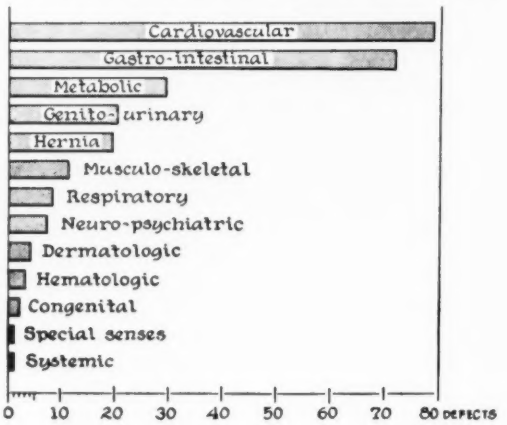

Fig. 2.
Distribution of newly discovered diseases.
750 Individuals.

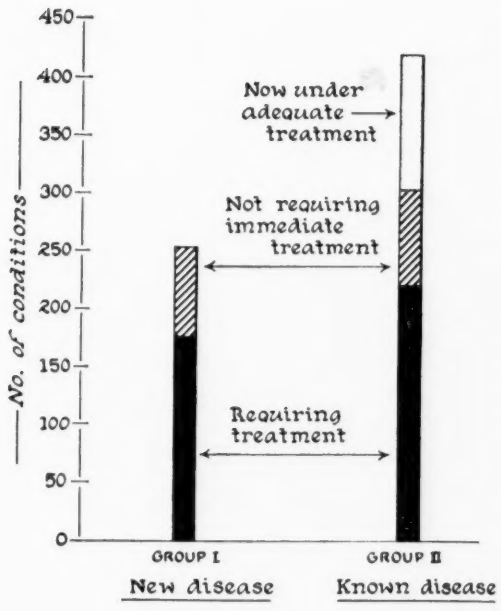

Fig. 3.
Treatment status of 750 individuals.

had occurred. In all individuals proctoscoped the incidence of polyps was 6% which is in agreement with many published results.

Of the remaining gastro-intestinal diseases, motor dysfunction of the gastro-intestinal tract constituted the largest group (20%). It is interesting that peptic ulcer and cholelithiasis were found in only five instances. This is probably explained by the fact that individuals with these diseases had sufficiently pronounced symptoms to have prompted them to seek medical advice at once, rather than to wait for a periodic examination. Other gastro-intestinal diseases listed were hepatic cirrhosis, diverticulitis, and hypertrophic gastritis.

Of the metabolic diseases, disturbances of pancreatic function were most frequently encountered. In 20 instances either elevation of the postprandial blood sugar or glycosuria prompted further studies which led in three individuals to a diagnosis of frank diabetes mellitus requiring treatment with insulin, in 15 others to a diagnosis of mild diabetes which was controlled by diet alone. Two examples of renal glycosuria without hyperglycemia were encountered. In the category of metabolic diseases, hyperuricemia with or without clinical gout was next in frequency.

In the genito-urinary category, prostatic disease was most frequently encountered, while pyelitis, ureteral calculus, myoma uteri and dysfunctional uterine bleeding were also listed. Inguinal hernias, in many instances requiring surgical repair, were found in 19 individuals.

Five malignancies were found in these 750 examinations, including carcinomas of the rectum, stomach, bronchus, carcinoma of a rectal polyp, and an epithelioma of the skin. One to three years have elapsed since surgical treatment of these lesions was carried out. The patient with carcinoma of the rectum is dead, the remaining four are well.

Obesity was present in 16% of the entire group, which finding approximates the widely accepted figure of 20% incidence in the general population. The diagnosis of obesity was not included in the category of newly discovered disease since it was assumed that its existence was known to the examinee prior to the examination.

The treatment status of both newly discovered and previously recognized disease is indicated in Fig. 3. In the opinion of the examiners 70% of the newly discovered disease warranted treatment. Where previously recognized disease was encountered, nearly half of the individuals, in our opinion, could have benefited by additional treatment, while only slightly over 25% were paying adequate attention to known disabilities. It is admittedly difficult to arrive at an accurate opinion concerning this latter question, since frequently our information concerning the details of treatment was incomplete. The results suggest, however, since all of these individuals were at an economic level where good medical advice was obtainable, that failure to avail themselves of it was often a matter of neglect.

The incidence of symptoms where significant disease was encountered, is shown in Fig. 4. In the group with newly discovered diseases only slightly over 30% had symptoms attributable to the disease found, whereas in those with previously recognized disease nearly 50% had symptoms. This would seem to confirm the impression that in the presence of symptoms individuals sought medical care from their private physi-

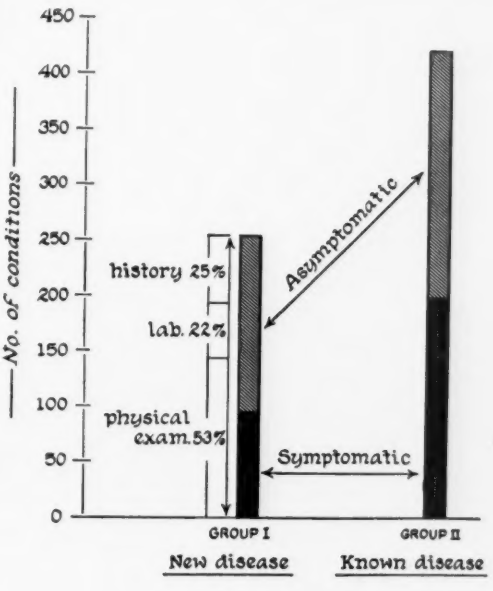

Fig. 4.
Symptoms at time of examination.
750 Individuals.

cians rather than to wait for periodic health examinations.

What part of the periodic health examination gave the information leading to the initial diagnosis of significant disease? Our figures indicate that the physical examinations provided the information in 53% of cases, the history in 25%, and the laboratory in 22%. It is admittedly difficult to judge the accuracy of these figures, since, for example, an unrecorded remark made by the patient during history-taking might have prompted the examiner to search for a physical finding later credited with providing the diagnosis. Likewise, a small micro-aneurysm seen on funduscopic examination might have suggested the possibility of diabetes, later established by the laboratory. In such instances, it is impossible to determine on what basis the diagnosis actually rested.

The justification for continued examinations at periodic intervals after the initial study depends upon finding significant new disease in subsequent years. It is important, therefore, to determine the incidence of newly discovered disease on later examinations. Since our Clinic has been in operation for only a short time, our data in this respect are necessarily scanty. However, they indicate that in 150 cases 22% of examinees were found to have developed significant new disease in the one- to two-year interval since the initial examination. Of the diseases discovered on the second examination, colonic polyps constituted the most frequently encountered lesion, occurring in 13 of the 150 individuals. In 11 they had developed or had been detected in individuals previously found free, in the remaining two, polyps had also been found and removed during the initial examination. In seven individuals significant elevations of blood pressure were found in those previously normotensive. Some of the other conditions found on the second examination were as follows: ureteral calculus, cholelithiasis, diabetes, inguinal hernia, duodenal ulcer, and thyroid adenoma.

In 12 instances individuals reported new disease discovered elsewhere in the interval between examinations. In 29 instances, minor defects not noted in the first examination were recorded. In 11 instances disease considered significant on the initial examination was not present on follow-up, either because of treatment in the interim, or spontaneous subsidence. In the latter group a number of patients originally considered hypertensive were normotensive on restudy. It should be noted that subsequent examinations were frequently carried out by a physician other than the original one. This doubtless accounts for some of the differences in diagnosis, particularly in the enumeration of minor defects, since some examiners were more meticulous in recording all of the disorders found.

Comment

WIDE differences of opinion concerning the value of periodic health examinations undoubtedly exist. The advocacy of a program should rest on the basis of demonstrated accomplishment, and not merely on personal enthusiasm. To overestimate what it can accomplish is to retard the development of what we consider a distinctly worth-while effort which fully justifies the time and money devoted to it. In appraising the results, the decision whether certain findings indicate significant new disease or merely minor defects not materially influencing the health of the individual is a purely subjective one, in which the enthusiast might well find his interpretation at variance with that of his more conservative colleagues. One of the most valuable aspects of a symposium such as this is the opportunity to compare the results of a number of studies conducted independently by different individuals in many localities.

It seems significant, however, that the available results, though obtained by somewhat different methods and evaluated independently, are reasonably consistent.

The early detection of certain diseases can lead to their arrest or to successful treatment, while in others, it contributes little. This limitation, however, does not discredit the effort toward early detection and treatment, but merely points up the incompleteness of our present knowledge. Awareness of the existence of a medical problem, even though little can be done about it at present, certainly constitutes the first step in its ultimate solution.

Many practical problems in the planning and conduct of periodic health examinations remain to be solved. The value of each individual procedure must be demonstrated before it is accepted as a basic component of the examination. Only in this manner can the maximum yield result from the minimum expenditure of effort, time, and money. Such an evaluation of the elements of the examinations can only be accomplished by painstaking analysis of results and by the publication of data which permits the comparison of various programs. The Industrial Medical Association is in a peculiarly favorable position to provide leadership in this effort.

The attitude of the physicians carrying out these examinations is a large factor in determining their success or failure. If they are regarded as a chore, and are performed in a perfunctory manner, they will fall far short of their purpose. If physicians are aware, however, of the significant yield of thorough examinations, their approach to the task is more rewarding, both to themselves and to the patient. In this connection we believe that the avoidance of a fixed and "routine" examination and the encouragement of individualized study, in which the physician is free to make whatever investigations he regards necessary, is equally good for him and for his patient.

Summary and Conclusions

PERIODIC health examinations have been carried out for a three-year period in the University of Pennsylvania Diagnostic Clinic. The examinees have been presumably well individuals holding

positions of responsibility in manufacturing, mercantile, legal, publishing, and banking firms. In the examinations we have endeavored as far as possible to avoid a routine approach and to study each individual in a manner that best suits his needs. The results of the examinations indicate that in one individual out of three significant new disease is discovered. In many instances it is possible to institute treatment which at best eradicates the disease and which at least helps to ameliorate the situation. It is our belief that the results achieved in the early detection and treatment of disease amply justify the expense and effort of the examinations. In one-half of the individuals we encounter disease processes already known by them to exist. The periodic re-evaluation of whether such processes are progressive or are stationary, and whether they are being adequately treated or deserve greater attention is a further contribution to the health of the individuals concerned.

It is our belief that through constant efforts to perfect our techniques and to increase the understanding and interest of both physicians and the laity in the benefits to be derived from careful and complete periodic health examinations, a significant contribution can be made to the nation's health.

Medical Directors Club of Chicago

THE FORMATION of the Medical Directors Club of Chicago was suggested for the first time in April, 1955, at the Annual Meeting of the Industrial Medical Association in Buffalo. A group of Chicago industrial physicians were together one evening when the idea was born. Carl Olson, of Liberty Mutual, carried the suggestion from the thought to the formative stage, and did the necessary preliminary work during the summer and early fall months. Finally on November 3, 1955, a Founders Group met, and the Medical Directors Club of Chicago came into official being. Now, why another medical organization? A physician, so inclined, could spend all of his time attending medical meetings. Scientific medicine is divided into numerous categories according to special fields of interest, and each field has its official group organization. General medicine is represented by the American Medical Association and the various state and local groups. General medicine is divided into the various specialties, each represented by its own organization. The newest and one of the most dynamic in terms of growth is Industrial Medicine. The national organization of physicians in industry is the Industrial Medical Association, which concerns itself mainly with the application of clinical medicine to the industrial worker. Our group does not concern itself with clinical medicine. Instead, we devote our meeting time to the technicalities of administrative industrial medicine. For example, we are interested in such problems as the introduction of influenza preventive programs rather than how influenza vaccine works; the responsibility of the Medical Department in the development of an absentee-control program rather than what drugs effectively control diseases; the development of the most effective plant medical program within the limits of the corporation budget, rather than the application of clinical medicine in all its phases without regard to the cost structure on which the company must operate. There are only two other such groups in existence today. Since our members are industrial medical administrators, we are interested in administrative industrial medicine.

—From an Address by H. R. ATHERTON, M.D., Medical Director, Swift & Company, at a meeting of the Medical Directors Club of Chicago, February 2, 1956.

Physical Fitness— Why, How Much, and How to Acquire

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CURRENTLY there has been a sudden nation-wide increase of interest in physical fitness. Two factors seem mainly responsible for this: (1) the report of Kraus,[7] and (2) the coronary episode experienced by President Eisenhower.

Kraus and his associates reported[7] that the physical fitness of American children is much lower than that of European children. While less than 10% of European children failed in the Kraus-Weber test, 80% of the American children failed it.

President Eisenhower was so shocked by this report that he called a conference to consider the situation and to find a way to raise the level of physical fitness of the American youth. Then, just a few days before this conference was to start, the President himself collapsed. The apparently healthy man, who has been under constant medical supervision, suddenly collapsed from an insidious heart disease. Now he must carefully regulate his activities.

Thus, the children and the President of a great nation seemed to be below par physically. What about the rest of the population?

Examination of reports published by Selective Service[10] indicates that over 60% of men between 18 and 19 years of age were pronounced unfit for service in the Armed Forces. Over 60% of young men unfit! And these young men will have to go through life with their respective handicaps. A rather grim picture! A picture showing that the majority of the people in this country are physically unfit!

Fortunately, this picture is not real and is largely based on assumption and confusion.

Let us consider the Kraus-Weber test. It consists of six items: two types of sit-ups, leg lift in supine and prone position, trunk hyperextension (in prone position), and touching the floor with the hands while in standing position and without bending the knees.

The percent of failure reported by Kraus, *et al.*, is not typical of all American children. In Iowa,[3] this percentage was 66.1; in Indiana[9] it was 17.7, and Wear states that children in Lincoln, Nebraska, passed the test almost like European children. Around Springfield, Massachusetts, the percent of failure after one test given to 1042 children was 56; after the second test, it was 40.

Most failures in this test occur because children cannot touch the floor with their hands if the legs are kept straight. Moreover, more boys than girls fail in this test item. Therefore, this seems to make boys inferior to girls in physical fitness. It may be that an average American boy living in a large city has musculature less developed than that of a European child, but the situation can hardly be called alarming because, with very little extra attention given, children show a miraculous improvement in "physical fitness."

To illustrate: Mr. K. G. Sullivan, of the Longmeadow (Massachusetts) Public School System, took 20 boys between 12 and 14 years of age, who failed in one or more items of the Kraus-Weber test and gave them a five-minute warming up exercise consisting of movements used in the test. After this, 15 out of 20 boys passed the test. A week later, 19 out of 20 boys passed the test. The one who didn't pass was a boy who needed medical attention.

A failure in the Kraus-Weber test does not justify an assumption that it means a failure in physical fitness.

As to the Selective Service reports, even a superficial examination will reveal that most causes of rejections were medical, and strictly speaking cannot be considered as the result of lack of physical fitness which could have been improved by physical activities. In spite of this, physical educators have been frequently blamed for this high incidence of rejections.

What is Physical Fitness?

THERE are many definitions of physical fitness. The differences depend on the point of view and on the capacity to grasp the problem. Some definitions are short and simple; the others are long and attempt to include all the organs of the body endowed with either normal or fancy characteristics.

In one of such long definitions, practically all organs except the skin are enumerated. It includes: "Fit heart and circulatory system with marked resistance to cardiovascular fatigue." . . . "Fit glands of internal secretion and blood" . . . . "Fit nervous system for rhythmic alterna-

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tion of abundant energy and relaxation" . . . . "Normal sexual vigor and virility."[1]

A definition containing all these items makes one wonder: What is a marked resistance to cardiovascular fatigue; why should nervous energy alternate rhythmically? Are both sexual vigor and virility necessary, and how can either of them be developed? This facet of physical fitness can be traced to Bernarr McFadden and his "physical culture."

Shorter definitions are devoid of fancy scaffolding, are without exaggerated claims, and usually succeed in emphasizing the important point. Here is a short definition prepared by Darling and his associates after they canvassed a number of leaders in the field of Physical Education: "Physical fitness describes the functional capacity of the individual for a task . . . . the fit individual can perform the task repeatedly without undue fatigue and has a reserve capacity to meet and sustain unexpected stresses which may arise."[2]

My own definition of physical fitness is: "A fitness to withstand muscular stresses of normal life."

It is obvious that the connotation of the word "normal," while having a relatively narrow range for children, covers an extremely wide range for adults. The normal life of an East Indian monk, spending his time sitting quietly and contemplating, is much different from a normal life of an American farmer, or a grocery clerk, or a foundry worker. Yet, even the life of the Indian monk does not consist of perpetually sitting. He needs a certain amount of fitness for locomotion. Moreover, he should be fit to cope with some emergencies requiring relatively great muscular effort. What are these "some emergencies," how much additional fitness will they require? Any attempt to answer this will be only a conjecture.

How Much Physical Fitness Do We Need?

TO MAKE this problem easier we will consider only adult people in the United States.

We may divide fitness into three components: fitness for living, fitness for recreational hobbies, and fitness for holding a job.

PHYSICAL FITNESS FOR LIVING:

The first question arises: What is physical fitness for living? Who knows? The best we can say is that a man should be able to walk, not only on a level but also uphill; should be able to run; should be able to lift and carry some weight. How much?

No acceptable standards ever have been developed. The consensus is that it is better to have more fitness than less. It is true that some invalids live in spite of greatly reduced fitness, but who, among normal people, would choose the life of an invalid? This last question, however, is vulnerable because some people without realizing it, invalidize themselves by restricting their physical activities.

Of course one should not forget that the needed degree of fitness depends on sex. The so-called weaker sex, can live longer and happier having 25% less muscular strength than man.

PHYSICAL FITNESS FOR RECREATIONAL PHYSICAL ACTIVITIES:

Obviously, the degree of fitness in this category will be an individual matter, depending upon the type of individual interest. The question arises, however, as to how far one should go in pursuing his physical hobby. Should a man after 40 try to be fit to compete in handball or tennis with a youth of 20? Should he participate in Marathon races, or join a Polar Bear Club and swim in icy water?

Of course only an extremely small number of people practice Marathon races, but one can still meet men over 60 participating in this sport. The same is true with the Polar Bear Club. The participants do these things because they make them "feel fine."

Other persons will play only golf, or go bowling, and they do this because it makes them "feel fine." Some just take strolls, and some avoid practically all recreation involving physical activities, and they "feel fine."

Thus the intensity of the effort in recreational activities may range from practically zero to a Herculean task, and in each case the reason given is that it makes them feel fine.

Some writers, especially Steincrohn,[12] insist that a man after 40 should greatly restrict his physical activities. Steincrohn cites a number of cases in which indulgence in physical activities led to a fatal outcome. In contrast, one can think of many patients, who led an unhappy existence because of inactivity enforced by physicians who made an error in diagnosis.

PHYSICAL FITNESS FOR HOLDING A JOB:

This naturally depends on the type of job. An office worker will not need any extra degree of fitness beyond that needed for just living. Jobs requiring great physical exertion, of course, will require greater muscular strength than is needed for living. To find out how much fitness is needed to hold a job, tests simulating the job can be used. Most industrial jobs (80%) however, require only a slight or moderate muscular exertion.[11]

The Tests of Physical Fitness

THERE are many different tests of fitness. They can be roughly divided into three groups: muscular performance, organic function, and a combination of both.[4] A comprehensive review may be found in reference[13].

In spite of considerable literature dealing with fitness tests, no fully satisfactory tests have been developed. The originators of tests either claimed to tell all by using a one-item test, or included so many items that testing became impractical.

Frequently tests differentiate between groups but fail to do so between individuals unless differences in scores are very large.

Performance type tests are not dependable unless the full cooperation of the individual is obtained. Some "organic" tests also suffer from this weakness. For instance, how can vital capacity be measured if the subject does not cooperate?

Some combination tests show more evidence of the effect of tradition than logic. For instance, in scoring the PFI test (Rogers), one cubic inch of vital capacity has the same value as one pound of hand-grip strength.

The norms for the test are mostly established on a student population and therefore may be at variance with norms for other populations. The result of this is that when an individual scores less than an average college student, he is called unfit.

Suppose that a certain individual scored in a test 10 points less than another man. So what? What's the difference? Suppose you buy two ties in two different stores, one for a $1.00, another for $1.10. Someone asks you the difference between the ties. The stock answer is 10 cents! You may not see any other difference between the ties. A difference between scores may be just as meaningless.

What is the value of physical fitness testing in industry? There isn't any doubt that physical performance tests can be made useful in screening applicants for jobs requiring strenuous muscular work. This means that probably applicants for less than 20% of the jobs will require testing. Frequently, even for these jobs, testing may not be necessary, because an experienced man can often "size up" an applicant.

The industrial tests for applicants have a very simple basis. They simulate the job. If a man passes them it is assumed that he can handle the job. In most cases, this will be true. One should not forget, however, that tests are usually of short duration and therefore don't test endurance. For this reason, some men who have successfully passed a test may fail on the job completely, while the others may work inefficiently during the first days, or weeks, of adaptation.

Performance tests under medical supervision are useful when men are expected to work under unusual conditions of temperature, humidity, or barometric pressure.

There still exists a widespread opinion among the testers that physical fitness is an accurate measure of health. There is no denial that when health is poor, physical fitness also may be poor. When, on the other hand, health is excellent, physical fitness may or may not be excellent. Probably health and physical fitness go hand-in-hand until they reach a level of, say, 70% each. After that, they may part company. This hypothetical statement unfortunately has no other basis than a hunch, and is presented as such.

This writer and his associates have successfully used the Brouha (Harvard) step-up test in evaluating physical improvement of military patients recovering from pneumonitis and rheumatic fever.[6] The results obtained with this test have been used for disposition of the patient on discharge from the hospital.

How Can Physical Fitness Be Improved?

THERE is nothing simpler than improving physical fitness provided two conditions are met: (1) good health, (2) not only a desire but also the will to improve. After these conditions have been met all that is necessary is to practice the activity in which improvement in performance is desired.

If one wants to become stronger he should practice weight lifting. He may work against extraneous resistance furnished by dumbbells, bar bells, and springs, or use his own body weight for chinning, dipping, and other exercise.

If it is endurance that is needed, one should practice endurance exercises. Results are usually obtained better under the supervision of an experienced instructor.

How much time is needed to gain a desired degree of fitness? One can easily understand that no dogmatic answer is possible. It depends on many factors: age, the initial degree of fitness, the desired degree of fitness, the amount of time one is willing to give to training, and *individual differences.*

In one experiment conducted by the writer,[7] a group of jail inmates had to ride bicycle ergometers five days a week. After one month the best man improved his performance six times, or 600%, while the worst one improved only 50%. After 22 weeks, the best improvement was 4420%. One man, who at the beginning of the experiment could not last on the bicycle more than 10 minutes, at the end of the experiment could ride over six hours.

Likewise one can increase his strength in a relatively short time, and in two months add up to one and one-quarter inches to the girth of his "biceps."[8]

There are many non-profit and profit making organizations promoting development of physical fitness. There are also free physical fitness sessions provided for the executives in various business organizations. There are many ex-athletes and home-made experts who offer programs for improving health and physical fitness. These programs vary from mild ones consisting of setting-up exercises to strenuous ones requiring a great deal of running and swimming. The results obtained depend on the strenuosity of the program.

An intriguing question, however, is: What type and how much of fitness should be developed? The answer to this question will depend on the trainer. An ex-weight lifter will speak in terms of weight lifted, an ex-swimmer in terms of all-around activities which will include running, chins, dips, squats, etc. The basis for judgment is usually arbitrary, the main argument being that, in the past, those men who reached a certain level reported that they felt better, worked better, and felt less tired at the end of the day.

Suppose we accept this testimony as an absolute truth; then, is it not possible that at a higher level of fitness the same man will feel much better, will work much better, and will tire much less easily?

Conclusion

FROM an industrial point of view, physical fitness is fitness to do the job. Over 80% of the jobs

require only light or moderate muscular exertion; therefore, not only men but women qualify. Moreover, even physically handicapped persons may qualify for some jobs. As a matter of fact, the handicapped persons often are more efficient workers than the non-handicapped.

If so little physical fitness is needed to do the job, shouldn't the worker and management be satisfied with a minimum of fitness—a minimum which will allow a worker to drag himself away toward home? Of course not.

If a person possesses minimum fitness, then even a light job will require a maximum effort on his part. No one can work efficiently at the top of his physical capacity.

Industries are usually safety-margin conscious. If a certain product is designed to withstand a required degree of stress, the manufacturers usually design it to withstand a much greater degree of stress. For the same reason, a much higher than minimum degree of fitness is preferred in a worker.

When a worker begins to show signs of unfitness for the job, he still may remain employed if he is given a new job which fits him. This practice has had a measure of success in some progressive industries.

The value of a worker cannot be measured in terms of physical fitness, or even in terms of professional skill alone. It depends also on his spirit of solidarity, or a realization that by doing his best for the company he does his best for his fellow workers and himself.

Provided that there is no serious gap between workers and management based on real or imaginary economic injustice, the solidarity between the partners may be increased through either active or passive participation in recreational activities. An average college graduate is tied more strongly to his Alma Mater by the varsity teams than by classroom activities. An average industrial worker may react in the same way.

References

1. Cureton, T. K.: Physical Fitness: Appraisal and Guidance. St. Louis, Mosby, 1947.
2. Dabling, R. C., Eichna, L. W., Heath, C. W., and Wolff, H. G.: Physical Fitness. *J.A.M.A.*, 136:764, 1948.
3. Fox, M. G., and Atwood, J.: Results of Testing Iowa School Children for Health and Fitness. *J. Health, Physical Education & Recr.*, 26:20, 1955.
4. Karpovich, P. V.: Physiology of Muscular Activity, 4th ed. Philadelphia, Saunders, 1953.
5. Karpovich, P. V., and Pestrecov, K.: Effect of Gelatin upon Muscular Work in Man. *Am. J. Physiol.*, 134:300, 1941.
6. Karpovich, P. V., Starr, M. P., Kimbro, R. W., Stoll, C. G., and Weiss, R. A.: Physical Reconditioning after Rheumatic Fever. *J.A.M.A.*, 130:1198, 1946.
7. Kraus, H., and Hirschland, R. P.: Minimum Muscular Fitness Tests in School Children. *Research Quart.*, 25:178, 1954.
8. Murray, J., and Karpovich, P. V.: Weight Training in Athletics. New York, Prentice-Hall, 1956.
9. Phillips, M., Bookwalter, C. D., McAuley, J., Sherwin, H., Summers, D., and Yeakel, H.: Analysis of Results from the Kraus-Weber Test of Minimum Muscular Fitness in Children. *Research Quart.*, 26:314, 1955.
10. Rowntree, L. G., McGill, K. H., and Edwards, T. I.: Cause of Rejection and Incidence of Defects Among 18 and 19 Year Old Selective Service Registrants. *J.A.M.A.*, 123:181, 1943.
11. Simonson, E.: Industrial Physiology. *Ann. Rev. Physiol.*, 6:543, 1944.
12. Steincrohn, P. J.: You Don't Have to Exercise: Rest Begins at Forty. *Garden City*, Doubleday Doran, 1942.
13. Taylor, H. L., and Brozek, J.: Evaluation of Fitness. *Recr. Proceed.*, 3:216, 1944.

Investment per Job

THERE is a growing capital investment required to provide jobs for employees, ranging in different types of companies from $4,000 to as high as $90,000 per employee. The Machinery and Allied Products Institute reported in 1954 that it takes about $11,400 in investment to create a job in American industry—with the average investment in plant and equipment per worker of about $9,800. Figuring depreciation of existing facilities used by workers, the average investment is about $4,800. However, in terms of adding thousands of dollars for the land and natural resources that industry uses, MAPI estimates that assets of all non-financial business in the U.S. total almost $700 billion. If farmland is excluded from that total, we get an average investment per worker of $11,400. In light of current depreciation in industrial plants, it costs $450 per worker per year merely to maintain the jobs we now have. Here are some figures reported by the Policyholders Service Bureau of the Metropolitan Life Insurance Company in 1948 of capital investment per employee in some well-known companies: Consolidated Edison ($35,000); Socony-Vacuum ($12,126); Standard Oil ($5077); Elgin Watch ($4379); Goodyear Tire and Rubber ($3993); Kodak ($2111). The average investment per employee in General Electric (Schenectady) during 1954 exceeded by almost $2000 the national all-industry figures—the company invested an average of $14,280 per employee. If cost of training individual employees was added to this amount, it would be raised substantially. For example, to train one machinist or draftsman, GE states an investment of $2500 is made by the company. In railroading, it costs $22,000 to keep a man "working on the railroad." In the steel industry, there is a capital investment of $90,000 behind every man.

—From "Personnel Costs: The Difference Between Profit and Loss," Publication of Industrial Psychology, Inc., Research Department, Tucson, Arizona.

The Promazine Treatment of Alcoholism

—A PRELIMINARY REPORT—

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Losses to industry in production and income as a direct result of alcoholism have been estimated at upward of a billion dollars a year.[1] Easily computed in dollars and cents are the actual costs of man-hours lost from the job and of accidents precipitated by "hangovers." The outlays of public funds for imprisonment or medical treatment of the inebriate, and for care of his family during his idle periods, are matters of record. Not so easily evaluated, however, are the indirect losses from alcoholic addiction[2]—the progressive deterioration of the potentially useful worker, and the detrimental influences on his home and social environment that inevitably alter his value to his employer.

The importance of alcoholism as a socio-economic and public health problem is indicated by a recent estimate that about 6% of American males are problem drinkers, and of these about one and a quarter million are chronic inebriates.[1] Addiction to alcohol among women is more difficult to estimate, since the economic problem involved is generally less acute.[1] However, since women have become a significant part of the labor force, it is now realized that the incidence is rising, and some observers have suggested that alcoholism may be nearly as common among women as among men.[1] Even more alarming is the increasing abuse of alcoholic beverages by the younger generation—the potential workers of the future. In the opinion of a recent investigator, one in every 15 among today's youths will become a habitual inebriate unless effective measures are employed to prevent such a disaster.[1] Since serious complications may be expected after 10 years of heavy drinking,[3] the young adult alcoholic already may have laid the groundwork for physical and mental decline before he reaches the peak period of his industrial productivity.

Compulsive drinking, it is said, is more prominent in this country than in Europe.[3] Certainly the striking contrast between the high rate of alcoholism among the American-born offspring of European parents and the more moderate use of alcohol by the European-born themselves is particularly obvious to any physician who practices in an industrial community with a large population of foreign extraction. It has been my observation, in years of practice among the foreign-born and their American children and grandchildren, that there is no significant drinking among the first generation—their efforts are concentrated on earning and saving. The second generation, however, seem not to experience the same drive to become established and achieve a place in the community; hence they tend to spend more of their income on diversions, which often lead to alcoholic excess. The third generation learn even earlier than did their fathers to pursue the psychological attractions of alcohol at the expense of most other interests.

What is the reason? Does a softening of the personality and character structure occur with increases in economic opportunities and easing of the struggle for the necessities of life? Are these individuals actually immature emotionally[4]; if so, why? This phase of the problem offers an interesting field for sociological and psychiatric study. In the meantime, what is to be done to stem such vast human and financial waste? Heretofore, little has been available for management even of the acute episode short of restraint, sedation and supportive treatment. The old theory that administration of alcohol prevented delirium tremens in the acutely inebriated was exploded long ago. Such heroic measures as spinal drainage have no rational basis in the therapy of alcoholism and have been largely abandoned. Digitalization often was thought necessary to support the overburdened and weakened heart through the period of violent agitation and hyperactivity. Infusions of nutrient solutions, salt, and vitamins have a logical place in therapy to restore fluid and nutritional balance in the body impaired by vomiting and prolonged nutritional deficiency, but such measures increase the problems of ward care.

Although adequate sedation remains a prime requisite, the conventional central nervous system depressants heretofore available have rendered the patient either so heavily stuporous as to be helpless, or restless, confused and combative from the after-effects. Bromides were never entirely satisfactory, and usually had to be alternated with doses of alcohol. The risk of bromide intoxication was considerable, since in some patients evidence of bromism developed early and on low blood concentrations. It has been known for 20 years that patients with delirium tremens are generally refractory to moderate doses of

The promazine used in this study was furnished as Sparine® Hydrochloride, Promazine Hydrochloride, by Wyeth Laboratories.

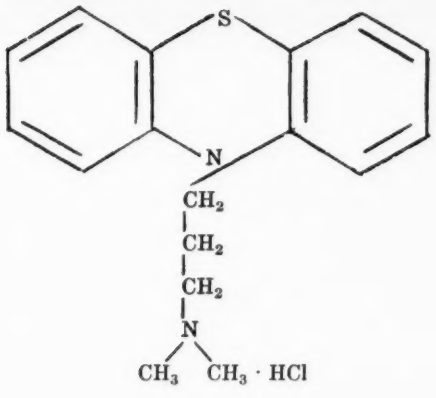

Fig. 1.
Promazine Hydrochloride.

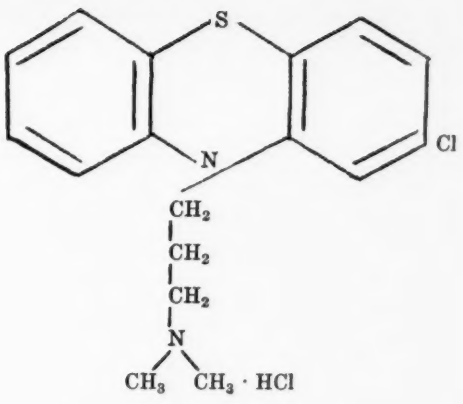

Fig. 2.
Chlorpromazine Hydrochloride.

narcotics, and that adequate doses are prone to produce untoward effects.[6] Paraldehyde tends to produce a secondary stimulation and in addition is undesirable because of the objectionable odor and taste. The barbiturates also are generally contraindicated because of the characteristic "after-kick," to which many alcoholics become habituated. Chloral hydrate, although an older and less potent agent than the newer compounds, is safer and more reliable than the hypnotics in routine use.[5]

Development, in the past two years, of chemical compounds (ataraxics) for the purpose of altering mood and quieting excitation without hypnosis has initiated the rise of a new era in the management of alcoholism.[7] The unique activity of these agents, the "narcobiosis" of Decourt,[8] has supplanted stupefaction of the patient produced by the older drugs through depression of the higher centers in the cerebral cortex. Although the pharmacological functions of such compounds are not yet fully understood, those of the phenothiazine series, in particular, are believed to exert an inhibiting effect on the subcortical areas of the central nervous system. Patients under medication show little response to disturbing stimuli, since the intensity is considerably reduced.

Chlorpromazine and the derivatives of Rauwolfia have been rather widely recommended for treatment of alcoholism, but the enthusiasm of the early reports has been markedly tempered by recognition of the numerous disadvantages of both.[9] Although chlorpromazine reduces excitation in a moderate percentage of patients without excessive somnolence,[10] the unpredictability of action and serious toxic effects are deterrents to routine use.[11,12] In my private practice there has been considerable complaint of nausea after chlorpromazine by mouth, and a number of itching skin eruptions have occurred.

In the alcoholic, whose vasomotor mechanism is notoriously unstable, chlorpromazine has produced severe hypotension often enough to justify alarm. According to one report, there was a definite risk of precipitous fall in blood pressure in the acutely inebriated if more than two 50-mg. doses of chlorpromazine were administered over a period of four hours[13]; parkinsonism has been observed following continuous administration of chlorpromazine. The patients complained of severe pain after intramuscular injection, and allergic cutaneous eruptions were a source of much inconvenience and unhappiness to the nurses. Their rubber gloves, it was reported, afforded no protection to their hands, since the fabric was destroyed by the substance at every point of contact.[13]

These and a number of other factors influenced us to try promazine (dimethylamino-n-propyl phenothiazine) (Fig. 1), which is said to have exhibited, in animal[14] and clinical[15] studies, similar pharmacological properties but less acute toxicity than chlorpromazine. In promazine, the chlorine radical, which, it is now realized, is unnecessary for production of ataractic effect, has been omitted from the molecular structure. It has been shown[14] that promazine lacks the pronounced and undesirable depressive effects associated with administration of the chlorinated compound, chlorpromazine (Fig. 2), which result in lethargy and mental and motor retardation.

Method

FIFTY-FOUR consecutive, unselected clinic patients (48 males, six females) were treated with promazine. Most were actively employed, on moderate income, in the industries located in this large metropolitan area, and the majority were members of families that had emigrated from southern, central, or eastern Europe. All had been drinking a number of years. Many had been admitted on several previous occasions, sometimes as often as three or four times a year, and in these the established pattern was an inevitable progression from acute inebriation to active delirium tremens.

The youngest patient was an apparently healthy 24 year old man; the oldest, a senile man of 74. The majority were in the 40 to 60 year

age group; the median age was 49 years. An alarming observation, however, was that *30% were young men in the 20's and 30's.*

Twenty-four (45%) were admitted in active delirium tremens, characterized by hallucinosis, tremors, agitation, hyperactivity, and diaphoresis.

In 16 (30%) delirium tremens was impending. These patients were weak, unsteady, tremulous, sweating, and extremely apprehensive. Several, having experienced delirium tremens before, were able to recognize the early symptoms and had overdosed themselves with sedatives before admission in an attempt to forestall the active stage, but had succeeded only in aggravating their condition.

Most of the patients with active or impending delirium tremens were admitted during the drinking episode. A few had been without liquor for two to 10 days.

Fourteen (25%) were merely acutely inebriated. Some were noisy, belligerent and difficult to manage; others were tremulous, nervous and nauseated, or drowsy and stuporous, after which they became violently active in about three or four hours.

Treatment of concomitant illnesses is very important in management of the alcoholic. In this group the percentage of complications was high—41%. Evidence of liver disease was present in 24%; two of these were admitted in hepatic coma, and one in convulsions. One had parkinsonism, two had cardiac involvement, three had esophageal varices, three had gastric ulcers, two had asthma, one had alcoholic neuritis, and one a possible Korsakoff's syndrome. Five patients were suffering from pneumonia; one had a severe laceration of the scalp with cerebral concussion; in one both feet were frostbitten; one had furunculosis of the entire body. Practically all were in poor general physical condition.

Treatment

IN THE early part of the series, 13 of the patients received the routine treatment for alcoholism initially (laxatives, high colonic irrigations, conventional sedatives); and two were medicated with chlorpromazine by mouth, one receiving eight doses of 50 mg. in two days, and one receiving six doses of 60 mg. with two grains of a quick-acting barbiturate, with no result. Promazine was then instituted.

For 39 (72%) promazine was started immediately on admission; no routine measures or other preliminary medications were used.

The *dose* of promazine was standardized at 100 mg. by mouth four times a day for all but three. One of these received one dose of 25 mg. intramuscularly, and one received one dose of 100 mg. intramuscularly, after which oral medication was substituted. One 29 year old man was admitted, critically ill, in severe delirium tremens; 100 mg. was administered intramuscularly every six hours for three doses a day during the first two days, and then he was placed on 100 mg. orally, four times a day.

Five of the acutely inebriated patients recovered after only two doses of 100 mg. administered throughout a 12-hour period (overnight). These slept soundly throughout the night and were discharged in good condition and able to return to their jobs the following morning. Nine patients required three to seven doses. These, too, slept throughout the night, and were discharged late the following day in condition to resume work.

The majority—31 patients—required eight to 16 doses, over a period of two to four days. Ten patients who were violently ill, and suffering from severe complications, required 19 doses or more. Two of these (one with Korsakoff's syndrome, and one with cirrhosis of the liver), both of whom had pneumonia and asthma, remained under treatment for 10 and 12 days, respectively, after which they were transferred to other wards for further treatment of their various medical problems.

Most of the patients became quiet at once and fell into a sound but not stuporous slumber after the first dose; some awakened in about four hours and received a second dose; others slept throughout the night. Nausea and vomiting ceased after the first dose.

In nine of the 16 patients admitted with impending delirium tremens active symptoms were prevented, although in previous admissions seven of them had invariably passed into the acute stage when the signs of incipient delirium tremens appeared.

Nine patients recovered from delirium tremens in 12 hours; i.e., after one to three doses of the medication and a day or night of sound sleep. In eight patients hallucinations and tremors subsided in 24 hours; and in seven, in 48 hours.

Six patients, all seriously ill, hallucinated for 72 hours, after which one cleared spontaneously. For the other five, when the delirium and tremor did not subside after 48 hours, ACTH was administered intramuscularly in doses of 40 mg. every six hours for one to three days, after which the sensorium cleared rapidly and tremors ceased. We wonder now whether larger initial doses of promazine, perhaps administered by vein, might not have shortened the period of delirium in these resistant cases without hormonal medication.

Persistence of symptoms seemed related, not to the age of the patient or the apparent severity of his inebriation, but to the seriousness of the complicating conditions.

In the entire series, the period of delirium was materially shortened; the over-all average duration of acute symptoms was 2.1 days per patient. The average stay in the alcoholic ward until discharge or transfer to other medical or surgical departments was 3.3 days per patient. Unless prevented by complicating illnesses, all were able to return at once to work after discharge.

No side effects occurred during treatment of this group. No patient complained of dizziness, and there was no evidence of orthostatic hypoten-

TABLE I.
DEATHS IN SERIES—10%

Patient Age	Condition on Admission	Cause and Time of Death
60	Impending DT's. Bronchopneumonia, esophageal varices, cirrhosis of liver.	Went into active DT's on second day. Controlled in 48 hours. Temperature rose. Transferred to medical ward for treatment of the pulmonary infection. Died of pneumonia four days later.
29	Impending DT's. Advanced cirrhosis of liver. Admitted in convulsions.	Improved first day. Went into active DT's on second day, continuing till four days later. Cardiac failure.
33	Active DT's. Advanced cirrhosis of liver, esophageal varices.	Although delirium subsided in 48 hours, died late on second day in hepatic coma.
55	Very severe active DT's. Condition critical. Admitted to alcoholic ward from emergency room. Had taken over-dose of barbiturates.	Delirium subsided first day. Second day was eating, talking rationally to nurse. Sat up in bed, and expired suddenly in cardiac failure.
50	Acute inebriation. Advanced cirrhosis of liver, esophageal varices, cardiac disease.	Agitation subsided within 24 hours, but patient died on third day in hepatic coma.

sion. None experienced headache or gastric discomfort after swallowing the tablets, and no cutaneous evidences of sensitivity were seen.

There were five deaths (mortality 10%). All occurred as a result of the severe complications (Table I). Two of these patients were admitted in impending delirium tremens. One, a 60 year old man, had bronchopneumonia, esophageal varices, and cirrhosis of the liver. He went into active delirium tremens on the second day, which was controlled in 48 hours. His temperature rose and he was transferred to the medical ward for treatment of the pulmonary infection. He died of pneumonia four days later. The other, a 29 year old man with advanced cirrhosis of the liver, was admitted in convulsions. The convulsions were checked and he improved throughout the first hospital day. On the second day he relapsed and went into active delirium tremens which continued until death four days later in cardiac failure.

Two of the deaths occurred in patients admitted in active delirium tremens. One, a 33 year old man, had advanced cirrhosis of the liver and esophageal varices. Although the delirium subsided in 48 hours, he died late on the second day in hepatic coma. The other, a 55 year old man, who was admitted to the alcoholic ward from the emergency room, was in critical condition with very severe active delirium tremens. He had taken an overdose of barbiturates in a vain attempt to forestall the acute stage. His delirium subsided on the first day. On the second day he ate normally, and talked rationally. He attempted to sit up to speak to a nurse, and expired suddenly in cardiac failure.

The fifth patient, a 50 year old man with advanced cirrhosis of the liver, esophageal varices and cardiac disease, was merely acutely inebriated at time of admission. His agitation was controlled within 24 hours, but he went into hepatic coma and died on the third day.

TABLE II.
METHODS USED AND RESULTS OBTAINED IN ROUTINE TREATMENT OF THE ACUTE ALCOHOLIC EPISODE

No. of Patients	Diagnosis	Therapy	Average duration of DT's	Average hospital stay	Mortality %
156	Acute and chronic alcoholism with delirium tremens.	Conventional measures	5 days	9 days to 1 mo.	10
54	Acute and chronic alcoholism with delirium tremens.	Promazine, 100 mg. q.i.d.	2.1 days	3.3 days	10

Comment

THERE WAS a wide difference between the methods employed and the results obtained in management of the acute alcoholic episode in this series and in those used previously, even up to March of the present year (Table II). In the 15-month period immediately previous to the start of this study, 156 patients were admitted in delirium tremens. All were treated by conventional methods. In no case did the delirium even begin to subside in 48 hours; symptoms persisted actively in the great majority for five days or more. The over-all average hospital stay was 12 days, and in a number was extended for three weeks to a month.

No intravenous fluids or clyses were required for any of the patients treated with promazine; when agitation and vomiting were checked the patient could be fed by mouth at once. Therefore there was no need of special nursing.

Isolation, maximum restraints, strong rooms, and barred windows are no longer used in the alcoholic ward. Protection of the patient from injury is accomplished by medication which controls his agitation and restlessness and causes him to sleep. Much less supervision is required.

From the information derived from this preliminary series it is realized that promazine can be administered with complete confidence. The drug is not habit-forming, as are so many of the agents formerly used. The clinical response is predictable, and the course of treatment can be easily followed. Therefore we now handle alcoholic patients in the same manner as any other group with medical problems. Alcoholism can be treated in the general hospital, and the uncomplicated case of delirium tremens in the regular medical wards.

Since, under the medication, the patient is quiet, tractable, sleeps soundly yet responds to directions, and can be roused as necessary, there is no reason why many of these patients cannot be treated at home by the family physician provided adequate supervision can be maintained. Among working people hospital expense is a serious burden. Since hospitalization insurance does not cover treatment of the alcoholic, any medication that enables his family to take care of him at home and that rapidly restores him to condition for work is a great boon to his dependents and an advantage to his employer.

Essential as it is, however, medical treatment

to terminate the debauch solves only part of the problem. Far more important are correction and strengthening of the usually barren, inadequate character structure of the patient himself.[14,15]

The logical solution, in my opinion, is the establishment of state-supported rehabilitation clinics to provide an organized program through which the energies of the alcoholic may be channeled into more constructive activities. On completion of the medical treatment necessitated by the acute episode, the patient should be placed on probation under the supervision of the courts, and should be made to understand that his attendance and participation are mandatory. Treatment should be continued for at least a year, with continuance of maintenance medication. The cost, although perhaps considerable, would represent but a fraction of the present losses from alcoholism, and would go far toward preventing the enormous waste sustained by industry and the community at large.

Summary

THE FIRST step in checking the vast human and financial waste from alcoholism is more efficient control of the acute alcoholic episode. A preliminary series of 54 patients, of whom 30% were men between 20 and 38 years old, were treated with promazine, as part of a continuing study. Daily dosage totaled 400 mg., administered by mouth. Practically all were in poor general physical condition. Serious complications were present in 41%; 24% had evidence of liver disease. Seventy-five percent were admitted in active or impending delirium tremens.

Most patients became quiet after the first dose and slept soundly but not heavily. The average duration of acute symptoms was 2.1 days per patient; and the average hospital stay, 3.3 days. There were no side effects. All were able to return to work unless complicating illnesses prevented.

Promazine is non-habit forming, and may be used by the family physician for care of the alcoholic at home. Alcoholism now can be treated in the general hospital, and delirium tremens in the regular medical wards.

Rehabilitative measures to correct and strengthen the defective character structure of the alcoholic are recommended.

(88 Highland Avenue.)

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References

1. BLOCK, M. A.: Alcoholism: The Physician's Duty. *GP*, 6:53, 1952.
2. HULSE, W. C., and LOWINGER, L.: Understanding the Alcoholic. *GP*, 3:35, 1951.
3. JELLINEK, E. M., and KELLER, M.: Rates of Alcoholism in the United States of America, 1940-1948. *Quart. J. Stud. Alcohol*, 13:49, 1952.
4. PODOLSKY, E.: Management of Addictions. New York, Philosophical Library, Inc., 1955, pp. 29, 31-32. ENGLISH, O. S., and FINCH, S. M.: Introduction to Psychiatry. New York, W. W. Norton, 1954.
5. GATSKI, R. L.: Pentaerythritol Chloral: A New Agent for Hypnosis and Sedation. *Am. Pract. & Digest Treat*, 6:1885, 1955.
6. STECK, H.: Treatment of Delirium Tremens. *Schweiz. med. Wchnschr.*, 66:68, 1936.
7. LEAKE, C. D.: Drugs Affecting Mood and Behavior. *Texas Rep. Biol. & Med.*, 13:793, 1955.
8. DECOURT, P.: Narcobiotic Activity and the Mode of Action of Chlorpromazine. *Anesthesia*, 10:221, 1955.
9. BENNETT, A. E., *et al.*: Clinical Investigation of Chlorpromazine and Reserpine in Private Psychiatric Practice. *Am. J. Psychiat.*, 112:782, 1956.
10. Editorial: Tranquilizing Agents. *New England J. Med.*, 252:74, 1955.
11. FREED, H.: Chlorpromazine and Reserpine—New Era in Psychiatry? *Am. Pract. & Digest Treat.*, 6:706, 1955.
12. SIMS, J. L., *et al.*: Chlorpromazine: Changes in Hepatic Histology in the Absence of Jaundice. *J. Lab. & Clin. Med.*, 46:952, 1955.
13. FOX, V.: Private communication; to be published.
14. BEGANY, A. J., *et al.*: Tranquilizing Effect of Phenothiazines in Cats and Rabbits. *Federation Proc.*, 15:399, 1956. SEIFTER, J., *et al.*: To be published.
15. FAZEKAS, J. F., *et al.*: Use of Dimethylamino-n-propylphenothiazine in the Management of Patients with Acute Mental Disturbances. *Med. Ann. District Columbia*, 25:67, 1956. MITCHELL, E. H.: Treatment of Acute Alcoholism with Promazine. *J.A.M.A.*, 160:44, 1956. FAZEKAS, J. F., *et al.*: Management of Acutely Disturbed Patients with Promazine. *J.A.M.A.*, 160:4[illegible] 1956.

Walk Through the Plant?

LET'S TALK about physical or working environment. It is obvious that a healthful working environment is of the utmost importance in the maintenance of employee health. Yet how many plant physicians ever walk through the plant to observe health and safety conditions? And if they do, are they then able to get a hearing by management on their specific recommendations? Only recently our physician on a regular tour of the plant discovered that a paint booth was located only a few feet from a spot welder that threw sparks periodically. It had been there since the plant was started, and yet the hazard was not evident to us. Last weekend we spent nearly $1,000 to turn the paint booth completely around and eliminate this potential explosive situation. It is possible that the matter might never have been noticed until an accident occurred, unless our doctor had known that he had a responsibility for working environment beyond the walls of his office. And let's not forget our nurse in this connection: In our case, she, too, is expected to tour the plant periodically. To help her know the safety hazards of our particular kind of work, we had our nurse actually work on the assembly lines for three weeks before she, shall we say, "escaped" to the confines of the plant dispensary.

—From "The Expanding Scope of Industrial Medicine" by H. W. TULLOCH, Manager, Employee and Plant Community Relations, General Electric Company, Specialty Control Department, Waynesboro, Virginia, in *American Association of Industrial Nurses' Journal*, June, 1956.

A Rehabilitation Program for the Industrial Amputee

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THE WORKMEN'S compensation laws of practically all the states require that the employer or his insurance carrier provide an employee who has suffered a major amputation by reason of industrial injury with a prosthesis. Some of the state acts also specify that the employee is entitled to subsequent replacement or repair of the prosthesis.

Successful rehabilitation of the industrial amputee requires not only proper surgical selection of amputation site and careful preparation of the stump but it also requires definitive selection of the type of prosthetic device, based upon the type of work to which the employee is expected to return, as well as adequate supervised training in the use of the prosthesis, and counseling toward selective job placement.

About 12 years ago Liberty Mutual Insurance Company recognized the significant fact that many amputees were not successfully fitted for or trained in the use of the prosthesis. Almost as soon as the company opened its first Rehabilitation Center in Boston in 1943 it became evident that there was a real opportunity to study and apply methods of fitting and training amputees in the hope of more effective and productive job placement.

Preparation

LIBERTY MUTUAL'S rehabilitation program for the industrial amputee provides a continuous flow of service from the onset of injury until the amputee is returned and adjusted to gainful employment. Initiating this service is a specialized rehabilitation nurse whose first contact with the patient is made while post-surgical care is being administered at the hospital. With her knowledge of industrial requirements, she is able to help with the many problems and questions confronting the amputee: financial responsibilities, family care, prosthetic appliances and training, self-dependency, and future job possibilities. Assistance with these, plus literature on the Rehabilitation Center, enables the amputee to concentrate on the goal of maximum recovery. Periodic visits by the nurse during the convalescence period help to maintain his interest in becoming rehabilitated; the nurse provides him with a healthy positive approach toward realistic goals as a substitute for the negative, hopeless feeling that he is "all through."

Copies of the attending physician's initial report and subsequent re-examinations, plus the nurse's reports are sent to the Rehabilitation Center for review by the Medical Director and prosthetist. These reports contain information as to the age, personality, family status, educational and occupational background, medical and orthopedic complications, and other factors that will have an influence on an effective and successful program. Suggestions or recommendations by the staff orthopedist and prosthetist are made in a report to the responsible branch office in order to prepare the amputee thoroughly for his forthcoming rehabilitation program.

Recommendations by the orthopedist may include such suggestions as revision of the amputated stump at a more suitable site, care and treatment of such complications as neuromas and spurs, and other treatment that might avoid a delay in the over-all program. The prosthetist's recommendations are made to insure that an adequate pre-prosthetic program is being carried out for stump shape and shrinkage, muscle tone, and range of motion in joints proximal to the site of amputation.

The correct shape and size of the stump can be achieved by the amputee with proper instructions in the care and wrapping of the stump. An accepted practice is the application of a 4- or 6-inch elastic bandage to the stump in recurrent and figure eight fashion. Primary compression is applied to the distal end of the stump, with progressively less tension proximal to the site of amputation. In this manner, an edematous, bulbous, or redundant stump is avoided which would be a hindering factor for a successfully fitting prosthesis. The amputee must be instructed to rewrap the stump three or four times daily in order to maintain constant pressure and enhance the shrinking process. Hygienic care by daily bathing or soaking is a must in order to eliminate the possibility of skin complications.

Increasing the muscle tone on the amputated side can be initiated by static contraction of muscle groups as part of the post-surgical program. For example. on lower extremity amputees, quadriceps and hamstring setting can begin with the amputee in a supine or sitting position. Likewise, on upper extremity amputees, static contraction of the forearm flexors and extensors can be part of an early program. This must have

medical approval and supervision to eliminate the possibility of complications to sites of fractures, lacerated muscle tissue and suture lines. Generally speaking, a mild routine can be safely started 10 days to two weeks post-surgically and progressively increased.

Maintaining full range of motion to all joints proximal to the site of amputation is a must, if complete functional value is to be derived from a prosthesis. The prevention of contractures in the knee, hip and elbow joints, and stiffening of the shoulder joint is the chief reason for initiating active motion in these joints as soon as possible. Nothing is more discouraging to the staff of a rehabilitation center than to be confronted with a contracture of a knee or elbow joint in an otherwise ideal below-knee or below-elbow amputation. Such an unwarranted complication necessitates an additional several weeks of pre-prosthetic training—valuable time which delays the amputee's early return to work. Actively the amputee can be instructed in the use of progressive resistance exercises to prepare himself for the fitting of and training with his prosthesis. Resistance for these exercises can be provided by sugar or flour sacks filled with sand, and bricks or barbell weights which can be suspended from the stump by a padded belt or cuff. In addition, an active program will promote the elimination of edematous conditions in the distal portion of the stump.

Role of the Rehabilitation Center

WITH THE approval of the attending physician, arrangements are made to transport the amputee to one of Liberty Mutual's Rehabilitation Centers. The method of transportation, need for attendant care, wheel chair arrangements, ambulance service, hotel accommodations, and meeting the amputee at his destination are some of the preparatory problems of the field rehabilitation nurse.

That the Rehabilitation Center is the most logical place to treat the amputee effectively is shown by the services available to him. The staff at the Center consists of orthopedic specialists, internist, manager, prosthetist, physical and occupational therapists, rehabilitation nurse, counselor, and medical and general secretaries. Available as consultants are such specialists as neurologists, neurosurgeons, psychiatrists, and psychologists. The Rehabilitation Center program for the amputee is instituted by the orthopedic and medical examinations and is carried out through prescribed and supervised treatments in the fields of physical, occupational, and recreational therapy on a full-day, five-day-week basis.

The initial orthopedic examination is made in the presence of the staff prosthetist, the physical and occupational therapists, and the rehabilitation nurse counselor. Problems or complications related to the fitting of the amputee are discussed by the prosthetist and orthopedist and used as a basis for the type of prosthesis to be prescribed. Physical and occupational therapy is prescribed by the orthopedist and supervised by the therapists. Subsequent progress re-examinations are made during the pre-prosthetic and prosthetic training program.

The staff prosthetist supervises and assists in the daily program and thus becomes better acquainted with the amputee. This personal daily contact and the data collected from formal and informal discussions enable the prosthetist to determine the proper prosthetic prescription. Such information as educational and vocational background, interests and hobbies, future job possibilities, mechanical ingenuity and accessibility to prosthetic shops is utilized in making the final prescription.

The physical, occupational and recreational therapy departments are completely staffed to supervise the program on a daily basis. Prescribed physical therapy treatments consist of the accepted modalities of heat, massage, and progressive resistance exercises. In addition, floor mats, parallel bars and orthopedic stairs are part of the equipment utilized for pre-prosthetic and prosthetic training. Occupational therapy utilizes woodworking projects, looms for weaving, printing press, and the common activities of daily living. Recreational therapy consisting of games devised for promoting specific functional return, such as dowel checkers—and amputee checkers, table tennis, pocket billiards, and shuffleboard round out the rehabilitation program. Combined effort by these departments assists the amputee to achieve functional use from his prosthesis together with a practical application at bench work, rug weaving, printing, activities of daily living, and recreational games. A coordinated program enables the amputee to gain skills, dexterity and coordination, and increased endurance as a preparation for early return to gainful re-employment.

Selection of Prosthesis

THE PRINCIPAL consideration in the proper selection of a prosthesis for the industrial amputee is the future job or position to which he is to return. Job possibilities based on his past work, aptitudes, abilities and vocational interests are discussed with the employer and the amputee. With the future job in mind, the prosthetic prescription can then be properly made.

In considering the prosthesis, the materials and parts used must be lightweight, yet durable and efficient to permit a full day's work. Willow-wood incorporated in conventional lower-extremity prostheses with durable ankle, knee, and hip joints is found to be most practical. Likewise leather, plastic with fiber-glass re-enforcement, nylon-coated cable, or nylon cord should be used in upper extremity prostheses to withstand the continued hard daily wear.

Complicated mechanical devices and appliances should be avoided whenever possible. The simple utilitarian devices with maximum practical function are the ones that hold priority in fulfilling the prosthetic prescription. For example, the stainless steel utility hook is much more durable and practical than one of less durable metal

containing complicated mechanical features. An appliance that will not stand up under various job situations, necessitating constant repair and work interruptions, will soon discourage the amputee—with a non-wearer as the outcome. It also is unfair to the employer who has re-hired the amputee, because poor attendance and reduced reliability result from frequency of breakdowns and necessity for constant repairs. Such interruptions may result in loss of employment for the amputee and an avoidable failure by the employer in completing the final phase of rehabilitation.

In conjunction with the avoidance of complicated mechanical devices, maintenance of the prosthesis should be a problem that can easily be handled by the amputee. With the exception of major repairs, such as broken joints, and major adjustments, such as socket liners, the amputee must be able to care for and maintain his prosthesis and appliances in order satisfactorily to hold his job. While at the Center the amputee is thoroughly instructed in this care and maintenance. All the mechanical devices are dismantled to acquaint him with their care and reparable features. An upper-extremity amputee must be able to replace, repair or adjust wrist units, elbow units, control cables, and harness suspension, while a lower-extremity amputee must care for ankle, knee and hip joints, back checks, knee stops, and suspension belts. These repairs and adjustments can be made by soldering, riveting, stitching or sewing, and lubricating, and can be performed in any simple workshop with a minimum of equipment. This responsibility for care and maintenance enables the amputee to appreciate the value and importance of his appliance.

Fitting the Prosthesis

THE STAFF prosthetist supervises the measurements and fitting of the prosthesis by the limb manufacturer. Special adaptions which may deviate from the standard are discussed with the manufacturer to be sure that such ideas can be incorporated. Being familiar with the amputee's specific problems, the staff prosthetist is in an advantageous position to see that the most suitable type of prosthesis is properly fitted. Some of the considerations include types of feet, ankle joints, knee joints, suspension belts, terminal devices, terminal control systems, and harnesses. Needless to say, the prosthesis must be custom made and fitted. The necessary adaptations cannot be incorporated into a mail order prosthesis, because there is inadequate opportunity for proper prescription and special design.

Through the cooperation and exchange of ideas between the staff prosthetist and the limb manufacturer an excellently fitting prosthesis can be made. The test of a properly fitting prosthesis occurs while the patient is participating in the prosthetic training program at the Center. During prosthetic training, the final adjustments are made to insure comfort and a proper fit. Through careful daily supervision, the staff prosthetist is able to detect and recommend, or make, immediate adjustments. In this way the training program can continue without interruption.

Training

IN THE prosthetic training program a daily process of observation and examination by either the orthopedist or the prosthetist occurs. Progress examinations and reports are made by the orthopedist weekly or bi-weekly to avoid complications to the stump or to the physical condition of the amputee. Similar observations and reports are made by the staff prosthetist on a daily basis.

Therapeutically the physical and occupational therapists strive to assist the amputee in obtaining maximum function and utilization of his prosthesis for coping with future work. When possible, work situations and activities are created or utilized. No time limit is set on the training program; it is not concluded until the staff and the amputee feel that maximum results have been attained.

In addition to the advantages of supervised prosthetic training, the environment of the Rehabilitation Center psychologically assists the amputee in adjusting to his prosthesis. Daily living with other industrially injured patients and in many instances with other patients with similar disabilities brings out characteristics of courage and determination that might otherwise remain dormant in a protected home situation. The effect of assurance and praise by the Center staff is a stimulant to the self-confidence so important in the early stages of prosthetic training.

Follow-up

THE rehabilitation program does not terminate for the industrial amputee with his discharge from the Center. The rehabilitation nurse in the amputee's locality, when called upon, assists him in the early stages of adjustment to his new job. Periodic visits are made to insure proper maintenance and care of his prosthesis in order to be assured that his work meets with the standards set by his employer. Special privileges or created jobs are not requested, while on the other hand he is encouraged to use his own initiative in contacting his employer for re-employment and performing the duties of his job to his best ability. Competing with the able-bodied on an equal basis creates a greater sense of responsibility and commands praise and respect from his fellow workers and his employer.

Statistics

IN THE 12 years since Liberty Mutual opened its first Rehabilitation Center: 465 major amputees have been referred to these centers for treatment. Four hundred and seventeen of these amputees have been fitted under the supervision of the staff prosthetists; however, 51 had previously been fitted but required new prosthesis. Twenty-one of the cases referred needed major alterations; six did not require alterations, and in 21 a prosthesis was not recommended. There were 17 patients who were either referred for further

surgery, or refused treatment, or were rejected by the Center as not being suitable for fitting and training. As of September, 1955, 431 cases have completed the recommended training program, of which 345 (80%) have returned to gainful employment. In addition, 20 of the cases completing training are able to work; however, their present work status is unknown.

Conclusion

IN CONCLUSION, the rehabilitation of an industrial amputee cannot be confined to the fitting of a prosthetic appliance. The best results are obtained from a program which provides a continuous flow of services from the onset of injury to the placement back into gainful employment. With such a coordinated program, the amputee is treated as an individual—physically, and jobwise. To treat and fit the amputee according to type, e.g , below-knee, above-elbow, will fall short of the ultimate goal of return to industry. To fit him in accordance with future job requirements and individual personality will provide a greater degree of success; this is evident in the number of successfully re-employed industrial amputees.

"Acirema" the Beautiful

A DESCRIPTION of people in the United States in the manner of anthropologists describing primitive people, by Dr. Horace Miner, of the University of Michigan, appears in *American Anthropologist* (June). This "as yet undescribed tribe" he calls "Nacirema." (Try reading it backward.) "Nacirema culture is characterized by a highly developed market economy," Dr. Miner reports, "which has evolved in a rich natural habitat. While much of the people's time is devoted to economic pursuits, a large part of the fruits of these labors and a considerable portion of the day are spent in ritual activity, the focus of which is the human body, the appearance and health of which loom as a dominant concern in the ethos of the people." Each home, he says, has at least one shrine devoted to these rituals. Center of the shrine is a "charm box" built into the wall. This box is usually full to overflowing with magical packets of curative drugs. Beneath the charm box is a font. Each day every member of the family in turn enters the shrine room, bows his head before the charm box and proceeds with a brief rite of ablution. The daily body ritual performed by everyone includes a mouth-rite. Despite the fact that these people are so punctilious about care of the mouth, this rite involves a practice which strikes the uninitiated stranger as revolting. "It was reported to me that the ritual consists of inserting a small bundle of hog hairs into the mouth, along with certain magical powders, and then moving the bundles in a highly formalized series of gestures," Dr. Miner says. "In addition to the private mouth-rite, the people seek out a holy-mouth-man once or twice a year. These practitioners have an impressive set of paraphernalia, consisting of a variety of augers, awls, probes and prods. The use of these objects in the exorcism of the evils of the mouth involves almost unbelievable ritual torture of the client. The purpose of these ministrations is to arrest decay and to draw friends. The extremely sacred and traditional character of the rite is evident in the fact that the natives return to the holy-mouth-men year after year, despite the fact that their teeth continue to decay." —*Science News Letter*, June 16, 1956.

The Shoulder Cuff Syndrome

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BY DEFINITION, the shoulder cuff syndrome refers to those painful disabilities of shoulder which occur as a result of involvement of the musculotendinous structures which form the rotator cuff of the shoulder. These structures include the muscles, tendons and bursae of the deltoid, supra- and infra-spinatus, teres major and minor, subscapularis, coracobrachialis, and long head of the biceps. The muscles and tendons which form the rotator cuff of the shoulder are contiguous to the glenohumeral, acromioclavicular and scapulothoracic articulations; involvement of these latter structures may lead to painful disability of the shoulder. Hence, in its broadest sense, this terminology may be used to refer to the syndrome of the painful shoulder.

It follows from this definition that painful shoulder syndromes may arise from lesions directly involving the articular, capsular, muscular, tendonous, and bursal structures of the shoulder joint. Conditions arising from involvement of the structures just noted are referred to as the intrinsic shoulder disorders. Those disorders arising outside the shoulder but referred to it are known as the extrinsic type of painful shoulder disorders. Any disorder causing the painful shoulder syndrome, either intrinsic or extrinsic, can potentially lead to fibrous changes in and about the shoulder joint with the late development of the frozen shoulder.

THE diagnosis of the painful shoulder syndrome and the determination of its etiology are often difficult; adequate differentiation requires that a complete history and physical examination be done. Laboratory and x-ray examinations are usually required. Careful physical examination of the shoulder is always indicated. It is only through complete evaluation of the patient in terms of history, physical examination, and laboratory studies that the extrinsic causes of this syndrome can be eliminated from consideration.

The extrinsic causes of shoulder pain are catalogued in Table I. It is obvious on consideration of this long list of possible causes of shoulder pain, which is presented for completeness, that many of them are rarely encountered. However, it serves to reemphasize the importance of the complete work-up in dealing with the patient with complaints referable to the shoulder joint.

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For the most part, careful review of the history will eliminate or implicate the visceral diseases noted. The presence of a history of fatty food intolerance, a previous history of jaundice, or of an acute attack of cholecystitis will lead to further evaluation of the gall-bladder by the appropriate techniques.

The antecedent history of angina pectoris, a relatively recent myocardial infarction, or the finding of evidence of a myocardial infarction by electrocardiogram without accompanying cardiac pain may point to the heart as an etiological factor in the development of a painful shoulder, or shoulder-hand syndrome.

The presence of a Horner's syndrome accompanying a painful shoulder may be shown to be due to a pulmonary neoplasm of the Pancoast type when a chest x-ray is done. Occasionally an upper gastro-intestinal x-ray series will reveal a small diaphragmatic hernia to be the cause for shoulder pain.

Rheumatoid arthritis, rheumatic fever, diffuse collagen disease may all involve the shoulder joints. In these diseases, however, the clinical pictures with multiple joint involvement will usually clearly differentiate them from isolated shoulder pain.

TABLE I.
PAINFUL SHOULDER EXTRINSIC CAUSES

Visceral Disease Referred Pain		Cholecystitis Myocardial Infarction-Angina Pectoris Cerebrovascular Accident Pulmonary Neoplasm Diaphragmatic Hernia
Musculoskeletal		Rheumatoid Arthritis, Rheumatic Fever, Collagen Disease Articular-Degenerative Joint Disease—Cervical Spine Discogenic Disease Cervical Spine Non-Articular-Fibromyositis - Psychogenic Rheumatism
Vascular		Obliterative Vascular Disease Venous Thrombosis Lymphedema
Neurovascular		Shoulder-Hand Syndrome-Reflex Sympathetic Dystrophy; Scalenus Anticus-Cervical Rib Syndromes: Costoclavicular-Hyperabduction Syndrome
Neurologic	Central	Neoplasm - Brain or Cord Cerebrovascular Accident Syringomyelia-Basal Ganglion Disease
	Peripheral	Radiculitis Herpes Zoster Peripheral Neuritis

Careful search for the history of possible direct trauma or whiplash injury to the neck and complete examination of the range of motion of the cervical spine may give a clue to cervical discogenic or degenerative joint disease which may be confirmed by x-rays of this region. Patients with such disease may have specific patterns of pain radiation from the neck up over the occiput or into the shoulder and associated with painful trigger areas in the trapezii muscles.

The presence of a positive serology associated with severe destructive joint changes by x-ray may lead to the diagnosis of a Charcot joint.

Non-articular musculoskeletal causes of shoulder pain are not infrequent and are often associated with similar muscular complaints elsewhere in the body. The finding of tender myalgic spots or trigger areas is a frequent accompaniment of this type of shoulder pain.

Pure vascular lesions as a cause of the painful shoulder are extremely rare and need not be further discussed here.

The scalenus anticus and cervical rib syndrome may be considered to be etiologically related to the painful shoulder syndrome when the pulse pressure at the wrist can be shown to be reduced by rotation and extension of the neck to the affected side. These patients may have the complaint of numbness, paresthesias, coolness and weakness in the hand of the involved side. The deep reflexes may be diminished. The x-ray may confirm the presence of a cervical rib. Procaine infiltration of a tender scalenus anticus muscle may furnish temporary relief from symptoms and afford a positive therapeutic test, for the scalenus anticus syndrome.

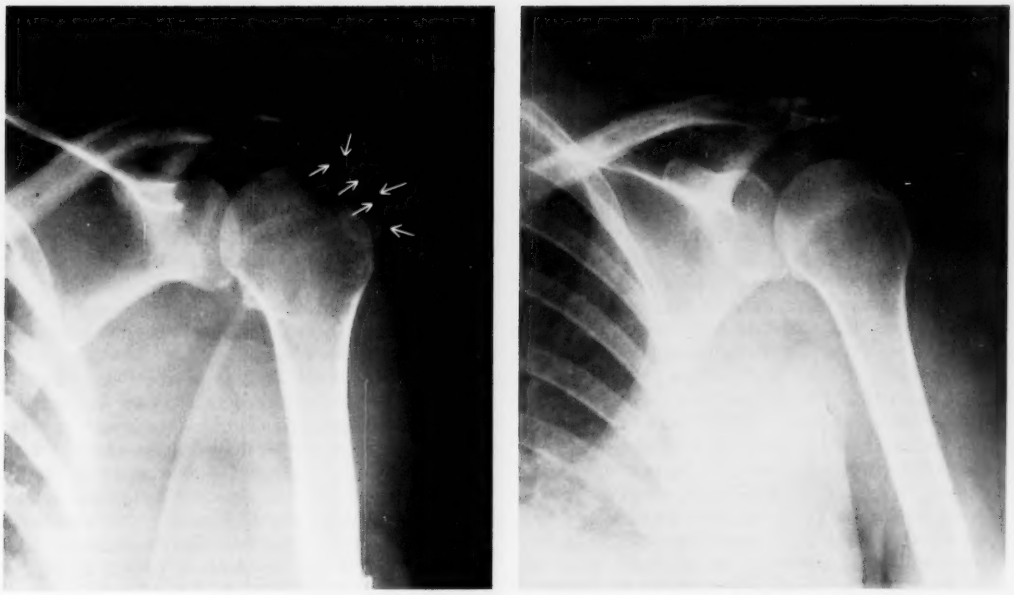
Although the shoulder-hand syndrome, a reflex sympathetic dystrophy, is a relatively infrequent cause of the painful shoulder, it represents one of the most interesting affections of the shoulder. As the name implies this disorder refers to a reflex neurovascular symptom complex involving the upper extremity and manifesting itself by painful disability of the shoulder and associated swelling and pain of the hand on the same side. It is usually a unilateral involvement although occasionally bilateral disease is noted. This disorder usually appears following trauma, myocardial infarction, or cerebrovascular accident. Occasionally, it may occur in association with degenerative joint disease of the cervical spine in which there is encroachment on the intervertebral foramina by bony spurs or as the sequel to an acute calcific bursitis or tendonitis. Often no demonstrable cause may be found for the onset of this syndrome. Clinically, the painful involvement of the shoulder is often insidious and in some patients forgotten when the involved hand becomes painful, swollen, diffusely tender, and exhibits changes in color and temperature. A myocardial infarction or severe attacks of angina pectoris most frequently precede this disorder. In these patients, the onset may be either acute or insidious. One week to many months after the original myocardial insult, the patients develop shoulder disability followed by the onset of stiffness, pain, and swelling of the hand on the affected side. The hand involvement is not limited to the joints but may involve the whole hand. Three phases of involvement have been noted by Steinbrocker: (1) The painful disability of the shoulder with generalized swelling and stiffness of the fingers not limited to the joints appears over three to six months. During this time the hand becomes red, swollen, tender to touch, and painful on motion, resembling the acute involvement of rheumatoid arthritis. At this time, the diagnosis of rheumatoid arthritis is often erroneously made. Vasomotor changes are noted and spotty osteoporosis is seen by x-ray. (2) Over a period of three to six months, there is gradual relief of shoulder disability and a gradual decrease in the swelling and redness in the hand. Concurrently, there is an increase in stiffness and deformity of the hand. Trophic changes become apparent and osteoporosis by x-ray increases. (3) In this last phase, the trophic changes become pronounced and contractures of the hand occur secondary to marked palmar fascitis of the type of the Dupuytren's contracture.

THIS BIZARRE symptom-complex is extremely refractory to treatment. Various types of therapy have been used, attesting to the lack of specificity of any one treatment in this disability. Early, elevation of the limb should be carried out and the various modalities of physical therapy should be applied. Heat, massage and exercise are to be employed in an attempt to maintain motion and prevent the development of deformities. The use of rest splints may be indicated in the attempt to prevent deformity. Often conservative therapy fails to relieve symptoms and prevent deformities.

Since this disorder is thought to be a reflex sympathetic dystrophy, it is to be expected that ganglionic blocking agents and techniques may be useful. Tertraethylammonium chloride has been tried with some success. Repeated stellate ganglion and cervical sympathetic blocks with procaine have proved effective in the treatment. These blocks have been administered at repeated intervals of from two to seven days. Seven or less blocks have been stated to give relief of symptoms in responsive patients. However, the blocks should be continued along with an intensive program of physical therapy until functional capacity of the patient is adequately restored.

In our hands, the use of adrenocorticotrophin and the systemic steroids (cortisone, hydrocortisone, prednisone or prednisolone) have been effective in the treatment of the shoulder-hand syndrome. This hormone therapy to be effective must be given in large doses over periods of time up to six months in order to prevent relapse with recurrence of symptoms. Steinbrocker feels that the over-all results with sympathetic block and steroid therapy are about equally effective; however, if stellate ganglion block is effective, relief is more prompt and the tendency for recurrence of symptoms infrequent.

Another adjunct in the treatment of the early



These x-rays are presented for comparison to show the disappearance of the calcific deposit in the supraspinatus tendon of the shoulder following intraarticular hydrocortisone into the shoulder and infiltration of the area of the subdeltoid bursa with procaine 1% and hydrocortisone mixture. The interval between x-rays is one week.

case of shoulder-hand syndrome is the intra-articular use of hydrocortisone into the involved shoulder. We, and others, have found this useful in a selected group of patients and this technique should at least be tried, especially in the individuals who have proved refractory to other forms of therapy. In any condition which causes the amount of pain, discomfort and disability noted in this syndrome, a multifaceted approach is indicated. It is to be remembered that all modalities discussed offer some possibility of interrupting this symptom complex, and that the use of a combined approach including stellate ganglion blocks, systemic and local steroid therapy and intensive physical therapy has much to commend it. The attempt must be to diagnose and treat this disability in its early stages before irreversible changes take place. When the medical approaches have failed, but irreversible changes have not yet occurred, sympathectomy may be in order.

The neurologic causes of extrinsic painful shoulder syndrome catalogued in Table I are self explanatory and will be eliminated from the consideration clinically by the thorough history and examination of the patient. In passing, it is interesting to note that several patients have been seen by us in whom painful disability of the shoulder associated with stiffness was a presenting finding of Parkinsonism.

I have now discussed the extrinsic causes of painful disability of the shoulder in some detail, despite the fact that these represent by far the smaller group of causes of the painful shoulder syndrome.

THE INTRINSIC causes of the painful shoulder tabulated in Table II represent the causes of over 90% of shoulder disability. Trauma, and infection and localized arthritis are self-explanatory causes of shoulder pain. Musculotendinous ruptures of the rotator cuff are properly the purview of the orthopedic surgeon.

TABLE II.
PAINFUL SHOULDER INTRINSIC CAUSES

Trauma	Infection	Neoplasm
Musculotendinous Ruptures of the Rotator Cuff		
Bursitis and Tendonitis		
Calcific and Non-Calcific		
Adhesive Capsulitis		

Acute calcific tendonitis and bursitis and non-calcific bursitis will be considered together for the sake of brevity. The essential difference between the two syndromes which give much the same clinical picture lies in the fact that in the former calcific deposits are apparent on x-ray examination of the involved shoulder. In general usage, the term subdeltoid bursitis is used to refer to both calcific and non-calcific bursitis. The etiology of this bursitis is not well known but is believed to be related to acute or chronic trauma in most instances. The actual inflammation of the bursa results from lesions in contiguous tissues such as the supraspinatus tendon or other musculotendinous structures forming the floor of the bursa. Although trauma is generally considered to be the prime etiological factor, instances of subdeltoid bursitis have been reported associated with infection (upper respiratory, dental, or other focal infection), exposure to cold, hyperabduction of the arm, metabolic disturbances (hyperthyroidism, diabetes mellitus), and menopause.

The symptoms of acute subdeltoid bursitis are

those of the acute agonizing onset of pain in the region of the shoulder joint aggravated by motion. Pain is worse at night. Radiation of pain is sometimes noted into the neck, the arm, and the fingers. Pain is frequently localized to the area of the insertion of the deltoid muscle. Acute tenderness over the area of the region of the greater tuberosity of the humerus and just below the acromioclavicular joint is a frequent finding and is often associated with tenderness over the anterior aspects of the shoulder, the coracoid process and bicipital groove. Abduction and internal rotation produce excruciating pain. About 50% of cases are noted to have associated calcareous deposits by x-ray examination.

The natural history of the acute attack of bursitis is such that the disease can be expected to run its course and remit within five to seven days in the majority of instances even if untreated except by the necessary measures to alleviate pain. However, in a small percentage of cases, the acute manifestations do not completely subside and the syndrome goes into a subacute and finally a chronic stage. In this type of shoulder involvement the major problem is no longer one of acute pain but rather of marked limitation of motion associated with ever increasing fibrous adhesions in and about the shoulder joint which by a mechanism of pain, spasm, adhesion formation, and further pain perpetuate and propagate themselves. The end state of this vicious circle is the development of adhesive capsulitis or the frozen shoulder. It is to be remembered that this late stage of shoulder disease may result not only from acute subdeltoid bursitis but also from any painful shoulder disorder, extrinsic or intrinsic, in which adequate mobilization of the shoulder joint has not been maintained.

THE conservative measures available in the treatment of the shoulder cuff syndrome are: (1) Limited use of the extremity during the acute painful phase. Complete rest of the part is indicated, with the hand and forearm elevated and the arm carried in adduction in a sling. This phase of treatment should not be prolonged over a period of two days. (2) Concurrently, analgesics including salicylates, sedatives such as phenobarbital, narcotics, such as codeine or demerol where necessary, are to be used to control pain and thus encourage early reinstitution of full range of motion. (3) The various modalities of physical therapy come into play here and the use of cold applications in the severe acute phases may aid in giving prompt relief from pain. Heat given in various ways as hot wet packs, diathermy, infrared or heating pad may be useful. Later, when the excruciating pain has been relieved, exercises aimed at reinstituting a full range of normal motion are indicated.

ACTH and the steroid compounds are available for use in the treatment of the acute and chronic painful shoulder syndrome when the spontaneous recovery is too long delayed or the patient intolerably uncomfortable. The systemic use of these compounds is always attended by a calculated risk which is decreased by the observation of the usual precautions and adjunctive therapy. These agents often by their anti-inflammatory properties decrease inflammation and pain and lead to a prompt recovery. Large doses are usually needed, and gradual reduction of the dose must be practiced if prompt exacerbation is not to follow withdrawal of the therapy.

In our hands one of the most useful therapies has been the local use of hydrocortisone injected directly into the bursa and the involved shoulder joint. This therapeutic approach will often lead to prompt amelioration of symptoms within a period of 24 hours and enable a program of adequate physical therapy to be instituted. Prompt disappearance of calcific deposits may occur following local intraarticular therapy.

Other methods of therapy have been used by us and others with varying results. These include procaine infiltration of involved bursae, two-needle lavage techniques in an attempt to wash out the chemically irritating calcific deposits.

IN SUMMARY, the shoulder cuff syndrome must be differentiated from the other syndromes of the painful shoulder caused by extrinsic disease. These extrinsic causes when recognized and treated will lead to subsidence of the shoulder symptoms. Intrinsic disease of the shoulder is primarily due to subdeltoid bursitis and its variants, traumatic lesions of musculotendinous cuff structures and the frozen shoulder. This latter entity may be the end result of any painful shoulder disability in which protracted limitation of motion occurs. The therapeutic approaches to this problem have been considered briefly.

"A Little Discouraging"

HOW WELL do executives take care of their health? Statistics compiled by Joseph D. Edwards, author of "Executives: Making Them Click" (University Books, Inc., New York, 1956), indicate that the average executive admits to being overweight, usually has some gastro-intestinal upsets, and complains of a "funny feeling" around the heart, especially after a hard day. As for his habits, he works nine to 11 hours a day, smokes two packs of cigarettes or four cigars daily, and skips lunch (or gulps it at a luncheon conference) twice a week. He has time for one proper lunch, two business dinners, and two social dinners weekly. He averages seven hours of sleep per night, but probably uses sleeping pills once a week. And he admits that this composite picture is a little discouraging.

—*The Management Review*, July, 1956.

One Industrial Health Program in the United States Navy

—GROWTH AND DEVELOPMENT—

N. B. WALKER, Coordinator, Industrial Health
Naval Supply Center, Oakland, California

THIS is written to set forth the various procedures that were developed in planning and implementing an occupational health program in a large industrial warehousing activity—the Oakland, California, Naval Supply Center—with approximately 10,000 employees. It will attempt to describe briefly the steps taken in the order of their implementation, the problems that arose, and the acts done to solve them. It will cover the three-year period involved in the development of the program—from one totally unacceptable to the management and the employees, to a program commended by top management, accepted by all the employees, and certified by the Occupational Health Institute as meeting the IMA standards for approval and certification.

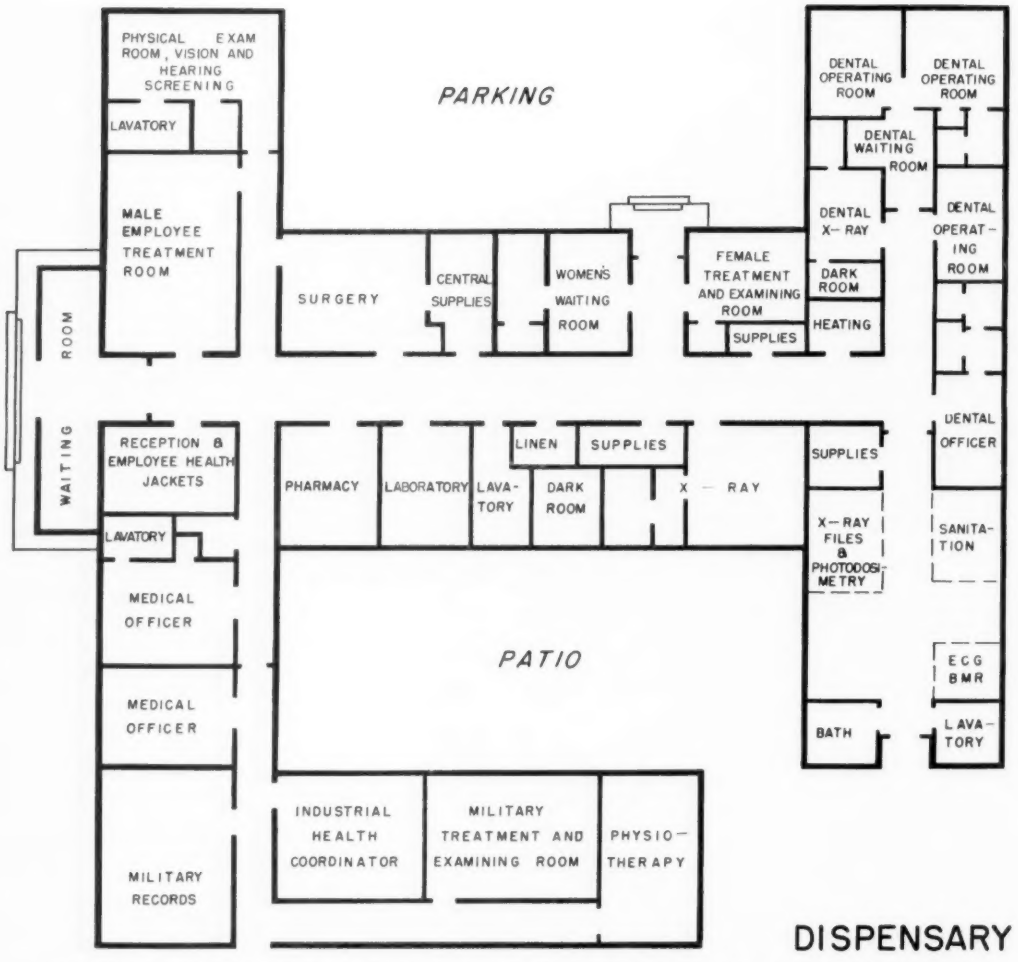
Establishment of the program at the Oakland, California, Naval Supply Center was started by recommendations of the Civilian Industrial Relations Officer and the Safety Superintendent. Their recommendations were in concurrence with recommendations expressed by an Industrial Medical Officer from another activity assigned here to investigate the need for an occupational health program.

The first step initiating the program at the Oakland Naval Supply Center was assignment of a Medical Officer trained in industrial medicine (September, 1951). The services of an Industrial Hygiene Engineer were obtained to make a survey of this activity (October, 1951). The survey was conducted by an inspection group consisting of the Industrial Medical Officer, the Safety Superintendent, and the Industrial Hygienist. Specific areas and working conditions considered to be health-hazardous were found. Immediate emergency controls in those areas were set up where controls already established were considered wholly or in part ineffective.

The inspection group discussed with the Civilian Industrial Relations Officer the personnel needed fully to establish the program, and all were in agreement that the full-time services of an Industrial Hygiene Engineer were not required, inasmuch as one was readily available on a consultive basis from nearby activities. They determined that there was need for a position of civilian Administrative Assistant to the Industrial Medical Officer to supervise the administrative details and to coordinate the program with industrial relations and operating personnel. They decided that the person hired for this position should be well versed in medical administration, personnel rules and regulations, public relations, management techniques and controls, and workman's compensation laws. This position was established and filled; its incumbent was designated Industrial Health Coordinator.

The Industrial Medical Officer and the Industrial Health Coordinator reviewed the existing medical facilities and made tentative plans for installation of the program. Those aspects that dealt solely with internal medical procedures were worked out within the Medical Department. Any part that needed approval by Command was developed in conjunction with the Civilian Industrial Relations Officer and the Safety Superintendent. Actually it was a coordinated group effort, a pooling of ideas, by the Industrial Relations Officer, the Industrial Medical Officer, the Safety Superintendent, and the Industrial Health Coordinator. When this group reached complete agreement on the application and content of any new or revised procedure it was presented to the Commanding Officer for approval or disapproval.

Industrial Health Coordinator Walker (left) and Captain Michael Wishengrad, MC, USN, Center's Medical Director, inspect civilian employee medical records in dispensary reception and record room.



Floor plan of Oakland Naval Supply Center Dispensary, where most functions of the Industrial Health Program are housed. Expanded sight conservation program required removal of the optometrist's office, files and diagnostic room to enlarged quarters in adjacent building.

THE SURVEY of existing medical facilities and staff revealed certain inadequacies. Several minor changes in space allocation were made to facilitate examinations and treatments, and to decrease "time away from the job" by the employee patient. The staffing requirements survey indicated that the Sight Conservation Program should be increased in scope and coverage, and should be moved from the Safety Department to the Medical Department for administrative as well as technical supervision. The three industrial nurses, while adequate in number, had not been assigned for best utilization. Inasmuch as there were only about 200 employees on each of the swing and graveyard shifts it was felt that one hour of coverage for each of these would be adequate so long as a military hospital corpsman was available and there was a Medical Officer on call. The shifts were set up as follows: 7:00 A.M. to 3:30 P.M.; 8:00 A.M. to 4:30 P.M.; and 9:00 A.M. to 5:30 P.M. One of the nurses had been used part-time to make home visits—this practice was stopped. The reason for this was that requests for home visits had become almost totally in sick leave abuse cases, and it was felt this service had become more of a police than a health activity and was working as a detriment to the health program. Additional clerical and optometric personnel for establishing the program were required and were accordingly placed on the rolls. All of these were put under the administrative supervision of the Industrial Health Coordinator (February, 1952).

IN APRIL, 1952, the Industrial Medical Officer and the Industrial Health Coordinator began to initiate various new and/or revised procedures for development and implementation of a working program. First was a manual of operational procedure for those aspects in partial operation or initiated to meet immediate needs.

In this group were:

1. A photodosimetry program was set up for all personnel exposed to radioactive materials.

2. A sight conservation program was given additional personnel; scope and coverage were increased; the program was moved from the Safety to the Medical Department; and procedures were adopted under which the program would operate.

3. Procedures were established for performing a comprehensive pre-employment (placement) examination on all new hires and all placements from within. This had been a mere formality in the past with little attention to the matching of physical findings with the physical and environmental factors of the job.

4. From the Industrial Relations Department all responsibility was assumed for scheduling employees for physical examinations because of hazardous positions, annual chest x-rays, follow-up treatments, etc.

5. A procedure was set up for examining all employees returning from sick leave in excess of three work days, with retention of private medical certificates in the Medical Department, furnishing to the Fiscal Officer (Paymaster) the Medical Officer's recommendation for approval or disapproval of such absence. Thus the Medical Officer determined whether the employee was sufficiently recovered to return to his regular job or should be assigned other work temporarily or permanently, and whether he should be scheduled for follow-up examination.

6. A procedure was developed to insure that all medical information concerning an employee be kept in the Medical Department available only to Medical Department personnel, such information always to be afforded privileged confidential handling when passing through other departments.

7. An individual employee health jacket was designed containing necessary forms, and all medical data from the Industrial Relations and Fiscal Departments were collected to be incorporated in this jacket.

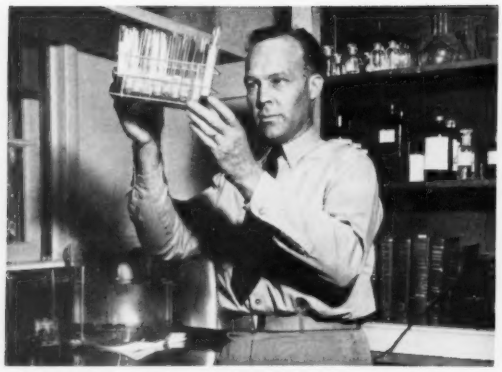
8. Tentative areas were established which were considered to be hazardous, and it was required that employees working in them be scheduled for periodic physical examinations based on the hazards involved.

A weekly narrative report on the progress of the program was submitted to the Commanding Officer. He gave full support at his conferences and through directives.

THE NEXT step was to get acceptance of the program by all levels of management, supervision, and employees. Medical Department personnel, and industrial relations and safety personnel put into operation a comprehensive, intensive indoctrination and training program designed to explain to all employees the benefits they and management would receive from an occupational health program. Daily meetings were held with supervisors and employees, individually and in groups. Weekly articles were published in the house organ. Industrial health was made a part of the curriculum of supervisory development training. In conjunction with this extensive indoctrination program each employee was requested to complete a voluntary health questionnaire (May, 1952). That the indoctrination had been successful was evidenced by almost 100% completion of the health questionnaire and the apparent veracity of the answers. ("Health Audit by Questionnaire," *Indust. Med. & Surg.*, 22:5, 211 (May) 1953.)

Tabulation of returns from this questionnaire revealed that approximately 26% of all employees had physical conditions that would probably become vocational limitations if these employees were not properly placed. It also revealed that many of the employees were not in positions com-

When physically handicapped employees are unusually hard to place, a placement committee takes over. In addition to Industrial Health Coordinator Walker (extreme left), it includes the Medical Director, employment officers, safety representatives, and line supervisors. When this placement committee met, Captain D. O. Zearbaugh (extreme right, since transferred) was Medical Director.



Chief hospital corpsman John B. Cunningham checks urine specimens for sugar and albumen. Annual urinalysis for all employees is routine; last year turned up a dozen cases of untreated diabetes.

Dr. James H. Durkin, O.D., as supervisory optometrist, examines warehouseman Preston Dehlin who, as an employee in an eye-hazardous position, is one of some 3,000 of the base's 6,500 workers who must wear the safety lenses.

patible with their physical limitations. This pointed up the immediate need for a comprehensive medical placement program. In October and November, 1952, this program was worked out with the Industrial Relations Department and placed in operation. ("The Right Man for the Right Job"—*Indust. Med. & Surg.*, 22:2, 69 (February) 1953.) Two thousand copies of this placement program were printed and distributed to all levels of supervision. The Industrial Relations Department established a position of Occupational Analyst to assist the Medical Department in this program and to make analyses of the physical and environmental factors of all arduous duty and trade positions. A Placement Committee was established (May, 1953); its members were the Medical Officer, the Industrial Health Coordinator, the Placement Officer, the Safety Superintendent, the Occupational Analyst, and immediate and top supervisors in the activity where the placement problem had arisen. This committee met on an "as-needed" basis and effected proper placement of employees with physical limitations. Proper placement was usually accomplished. However, occasionally it was necessary to separate or retire an employee.

A file of handicapped personnel was established in the Medical Department containing the names of employees, and their physical disabilities and work limitations. Details of work limitations were sent to the individual's supervisor and to the Industrial Relations Department with a request that the employee not be assigned to other than specified duties without clearance with the Medical Department. The utmost care was taken to insure that only work limitations, and not the medical reasons therefor, were made known to other than Medical Department personnel. Diligence was constantly maintained in this and all other aspects of the program to insure that medical information concerning an employee was maintained as privileged confidential information and did not leave the confines of the Medical Department without the written consent of the employee concerned.

WITH THESE programs in operation the Industrial Medical Officer and the Industrial Health Coordinator turned their attention to further fields. The Industrial Hygiene Engineer was again called to make a survey of the activity (August, 1953). This again took the form of a coordinated inspection by the Industrial Medical Officer, the Safety Superintendent, and the Industrial Hygienist. Following this survey, and with use of occupational analyses of the jobs, certain occupations were considered to be of a hazardous nature and special periodic examinations of employees were required. Examinations were scheduled at intervals of every three months to annually, depending on the positions and the extent of hazards involved. Approximately 3000 employees were employed in hazardous positions.

An annual chest x-ray was already being taken. It was decided that a routine urinalysis would be done on all employees (June, 1954). During the first year 12 employees, unaware of their condition, were found to be suffering from diabetes.

A program was established to perform a lumbosacral spinal x-ray on all employees being placed in arduous-duty positions (July, 1954). This resulted in rejection of several asymptomatic back conditions from assignment to these positions, and their placement in less arduous ones.

A program was established to perform annual physical examinations, on all executive personnel (November, 1954). The examination included EKG on all executives over 40 years of age. The purpose was to discover conditions in their incipiency so that personnel could be referred for treatment before the disease or condition had progressed sufficiently to impair the performance of work. This program was broadened to include personnel in "hard to recruit positions" (engineers, medical officers, optometrists, etc.). This was to extend the work life of employees whose loss would cause serious disruption of operations. Approximately 75 employees were considered to be in this executive level classification.

A program was set up to administer drugs and minor therapy, physiotherapy, hydrotherapy,

hypodermic injections, etc., to employees at the request of their private physicians, the cost of drugs or medicines being borne by the employee. This program was designed to cut down on the absenteeism of employees with non-industrial conditions.

It was decided to place all operators of mobile equipment (fork lift operators, straddle truck operators, tractor operators, etc.) on an annual renewable license basis. A part of the annual examination for renewal of their operator's permit would be a physical examination (November, 1955). And it was decided to perform a physical examination on all employees who did not have a current physical examination on file in the Medical Department (1955).

In order to make better use of the health questionnaire and the various health examinations and medical records, the employee was asked to sign a statement releasing all details of treatment received from the private physician or treatment agencies. This statement was incorporated in the employee's health jacket.

All personnel in eye-hazardous areas were required to wear protective lenses at all times while on the job, and were scheduled in for annual vision examination. All who were industrially blind (20/70 or less, corrected vision) in one eye were considered to be in an eye-hazardous occupation regardless of their job. Those not in eye-hazardous areas were placed on a biennial vision screening schedule, with referral to an optometrist or ophthalmologist when vision findings so indicated.

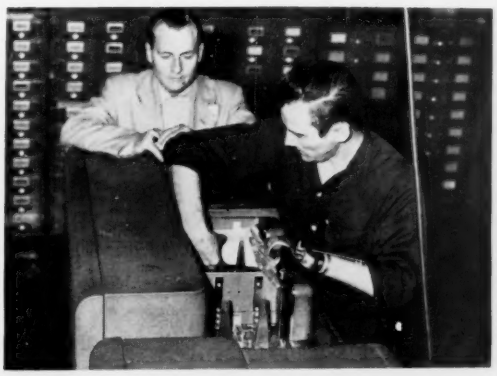
BY THE END of 1955 the program was considered to be staffed adequately, with three medical officers, one optometrist, one optometric clerk, industrial health coordinator, three industrial nurses, one receptionist-dictating machine transcriber, one medical secretary, and eight enlisted military hospital corpsmen. The number of employees served had decreased to approximately 6000.

The Naval Supply Center was cited by the President's Committee on "Employment of the Physically Handicapped" and by various state and local groups. It was commended by various management, industrial relations and medical inspection groups, and received certification (February 2, 1955) by the Occupational Health Institute as meeting the standards for a certified occupational health program.

A SUMMARY shows the following aspects of the program in operation after three years:

1. Comprehensive pre-placement examination of all new hires and all internal placements.
2. Current physical examination of all employees.
3. Annual physical examination on all executive personnel and personnel in "hard to recruit" positions.
4. Physical examinations of all personnel absent on sick leave in excess of three work days.
5. Fitness for duty (re-evaluation) physical examination when requested by Medical Officer, supervisor, or employee. Referral to placement committee if examination indicates employee not physically qualified to perform all aspects of his regular job.
6. Annual chest x-ray of all employees.
7. Annual diabetic survey of all employees.
8. Periodic physical examinations of all employees engaged in hazardous occupations.
9. Lumbosacral x-ray series of all employees selected for arduous-duty positions.
10. Annual physical examinations of all employees licensed as operators of mobile equipment.
11. Handicapped files with flag in personnel jacket, and notification of line supervisor, on any employee with physical disabilities that could become vocationally limiting if not properly placed.
12. Photodosimetry program covering all employees exposed to radiation.
13. Blood typing of all employees.
14. First aid training for teams of employees to be used as supplement to Medical Department in case of disaster.
15. Immunization (tetanus) program.

Carolyn M. Sullivan, accounting and statistics supervisor, has her blood pressure taken by Nurse Patricia Reilly during annual physical examination given to all employees. Mrs. Sullivan, a childhood polio victim, is another of the Center's handicapped workers.



Thomas A. Hellems, who lost his left arm in the Korean War, is one of some 1,600 employees on the Oakland Naval Supply Center, physically handicapped in greater or lesser degree, who have been put on the right jobs through the Center's placement program.

16. Treatment of non-industrial conditions at request of private physician to prevent loss of time necessary for travel to and from private physician's office or treatment agency.

17. Extensive handicapped placement program (26%).

18. Comprehensive, confidential, industrial-health jacket for each employee.

19. Comprehensive sanitation program.

20. Industrial Hygiene survey annually and upon request for specific conditions.

21. Occupational analyses of all arduous duty and trade positions.

22. Health counseling and health education programs, including such as early cancer detection, epileptic placement, diabetes, heart disease, problem drinking, etc.

23. Coordinated program with Industrial Relations Department to decrease sick absenteeism.

24. Annual visual examination of all employees in eye-hazardous areas.

25. Biennial visual examination of all employees not engaged in eye-hazardous operations.

26. The assignment of temporary light duty limited to seven days at a time, renewable every seven days with notification to Industrial Relations Department after 28 consecutive days of light duty.

27. Agreement with City Health Department clinical laboratory to re-check possible positive blood tests before referral of employee for treatment.

28. Procedure to insure that all employees with active syphilis report for and receive adequate treatment.

29. Coordination with Industrial Relations Department in pre-retirement planning program.

30. Coordination with state rehabilitation service for referral of cases.

31. Utilization of facilities, literature and personnel from Cancer Association, Heart Association, Polio Foundation, etc., for health education programs, and for advisory assistance in placement program.

32. Visits to other agencies, private and governmental, to exchange information, and inviting their visits to this Center.

33. Subscription to several periodicals, reviewing past literature, obtaining reprints of pertinent articles, and obtaining books on Occupational Health and Industrial Hygiene to gather a fairly comprehensive amount of reference material in the field of Industrial Health.

All of the above have been placed in operation. The smoothness of operation of the over-all program is enhanced by the closest cooperation between the Medical, Industrial Relations, and Safety Departments.

Contrast

IN PLANNING my talk I questioned my father—who began work with General Electric back in the nineties—about the employee medical facilities of his day. The answer was very simple. There just weren't any! The nearest thing to a plant physician was a fellow worker who had once been a veterinarian. Dad tells me that the standard treatment for a badly damaged finger was two coats of clear house shellac covered with a flannel bandage. And when he had a bad accident himself involving a severely smashed hand, repairs were made to it in the doctor's office uptown after considerable injections of cocaine by the doctor, and a considerable amount of straight whiskey administered by the nurse! Probably the first indication of an industrial medical program in GE was on December 4, 1894—barely 60 years ago—when the following letter, actually taken from General Electric files, was sent to a supervisor by the Assistant General Manager of the Schenectady Works. It read like this: "Dear Sir: A medicine chest has been placed in the office of the Assistant General Manager of the Works, the contents of which are for the free use of the employees in case of accident. The chest contains linseed oil, spirits of camphor, tincture of arnica, carbolated vaseline, oxide in zinc ointment, bicarbonate of soda, carbolic acid, witch hazel, surgeon's plaster and flannel bandages." Contrast that with the serious complaint of one of our engineers just the other day who felt that we should consider adding a psychiatrist to our medical staff to help employees get over those "rough days."

—From "The Expanding Scope of Industrial Medicine" by H. W. TULLOCH, Manager, Employee and Plant Community Relations, General Electric Company, Specialty Control Department, Waynesboro, Virginia, in *American Association of Industrial Nurses' Journal*, June, 1956.

Panel on Periodic Examinations

Industrial Medical Association Meeting, April 26, 1956

O. T. MALLERY, JR., M.D.
Institute of Industrial Health, University of Michigan
Ann Arbor

OUR EXPERIENCE is based on the examinations of executives studied as in-patients at the University Hospital. This report deals with 500 initial examinations and the findings on subsequent annual visits in a smaller number of this same group. The ages average 48.5 years with two-thirds of the executives between 40 and 55 years of age. Ninety-six percent of these executives were male. Medical findings and corrective measures were given to the patient and submitted to his designated personal physician as well as, if requested by the individual, to the Medical Director of his company. The periodic frequency of examination was usually 12 months except in special cases where findings demanded re-examination at an earlier period.

Extent of the Examination and Its Method

THE PATIENT is examined as an in-patient on the private medical service over a three-day period. On the afternoon of admission, a history and physical examination are taken by the resident physician. No questionnaire is filled out by the patient. On the first morning this history and physical examination are amplified by the senior staff physician, and the senior staff requests consultation with other services as indicated. The time allotted to history taking and physical examination consumes two or more hours exclusive of further clinical studies performed by consulting services. Inquiry into personal matters such as work and environment, health habits, source of stress in family, office and daily life are sought as part of the complete history. These matters are given the personal attention of the senior staff examiner.

Laboratory Tests Routine in Every Case

THIS REPORT is based on a study designed to establish the value of performing certain laboratory procedures in asymptomatic individuals. These procedures include complete blood count, sedimentation rate, serology, urinalysis and stool examination; blood chemistries, non-protein nitrogen, acid and alkaline phosphatase, and fasting blood sugar; x-ray of the chest, gall-bladder, upper gastro-intestinal tract and colon; electrocardiogram; and sigmoidoscopy. In any individual patient additional laboratory studies are included on the basis of history and physical examination or symptomatology. The time devoted to laboratory, x-ray and special examinations probably totals approximately one day out of the three days of the study. The routine laboratory tests above are not altered on the basis of the patient's age.

Medical Findings

ON INITIAL examination of 500 executives, one or more defects were found in 77.6% of the total number of patients. This figure is without significance unless the type of defect is classified according to its seriousness. Defects are divided into two groups: those in which treatment is needed, and those in which treatment is not needed. The assumption is made that significant findings are those in which treatment is given or recommended, for this implies that a positive constructive health maintenance measure has been initiated. Of the patients examined initially, 52% had an abnormality which required treatment and 40% of the original 500 patients had a defect requiring treatment which was discovered for the first time during the course of this examination. In other words, of the 52% of the patients with an abnormality requiring treatment, 12% of these individuals were aware of the existance of the abnormality and 40% were informed for the first time of its presence.

One possible short coming of the health survey examination is the failure to initiate therapy when indicated. With our group, corrective measures were initiated prior to leaving the hospital in 77% to 92% of the patients in whom treatment was recommended.

New diagnoses, previously unknown to the patient, were brought to the attention of the physician most frequently through history and physical clues. However, disease unsuspected clinically was turned up by the laboratory in 12.3% of those with recommended treatable defects. Certainly, in most of the other patients with significant diagnoses, the laboratory played an essential role in supporting a suspected diagnosis. Of special significance were the contributions made by urinalysis and blood sugar values. Each established diagnoses in patients who had no signs

Presented as part of the Symposium on "The Effectiveness of Periodic Medical Evaluation in the Maintenance of Health and the Early Detection of Disease," at a Meeting of the Medical Section, INDUSTRIAL MEDICAL ASSOCIATION, at the INDUSTRIAL HEALTH CONFERENCE, Philadelphia, Thursday, April 26, 1956.

or symptoms of diabetes or urinary tract infections.

Chest x-rays: Of 932 examinations, 35, or 4%, were finally considered significantly abnormal. These included tuberculosis, carcinoma, significant cardiomegaly, emphysema, bronchiectasis and pneumonitis. The tuberculosis was unsuspected clinically.

Electrocardiogram: In two patients, myocardial infarctions were discovered, the incidents having gone unnoticed by the patients. Of a total of 868 tracings, 27% were reported abnormal. The commonest findings in order of appearance were left axis deviation followed by arrhythmias, right bundle branch block, infarcts and prolonged P-R interval.

Gastro-intestinal films: In 884 upper gastrointestinal films, abnormality was seen in 26%. The commonest finding was a persistent pylorospasm noted by the fluoroscopist. The x-ray diagnosis was poorly correlated with clinical symptomatology. Of 29 patients reported by the fluoroscopist, only 12 had sufficient symptoms to warrant treatment. Interestingly, other patients with similar clinical symptoms failed to show pylorospasm on fluoroscopy. No gastric carcinoma was found in 884 examinations. In 743 colon films, diverticulosis was seen in 15%. None of these patients had clinical evidence of diverticulitis. Gall-bladder studies were abnormal in 9% of 867 examinations. Three percent revealed calculi, 5% showed either faint visualization or nonvisualization. The sigmoidoscopy examination proved most valuable. Twenty-two percent of 477 examinations showed an abnormality. Either single or multiple polyps were found in 10% and hemorrhoids, fissures and other minor abnormalities in an additional 13%. A sigmoid carcinoma was discovered in one patient in a clinically asymptomatic stage.

Repeat Yearly Studies

ON RE-EXAMINATION at 12-month intervals, the same routine procedures were carried out. On the second, third, fourth, fifth and sixth visit new defects not previously found on earlier examination were discovered in 13-20% of all patients.

Incidence of Diseases of Special Interest

THE INCIDENCE on first examination of 500 executives of hypertension was 10%; 6% for both peptic ulcers and organic heart disease; 2% for diabetes; and 1% for carcinoma. On subsequent yearly examinations new cases of organic heart disease and hypertension occurred in as many as 5%, and carcinoma in 1%.

Health Appraisal Examinations

THE ADVANTAGES of a periodic health examination for an individual seems beyond dispute provided constructive or corrective measures are initiated, carried through, and followed up. A medical center affords the advantages of a rounded staff of varied professional interests for diagnosis, consultation, and definitive opinion. The in-patient program facilitates a concentrated program with a minimum of lost time to the examinee and professional and technical staff. It encourages the use of consultants, affords immediate opportunity to re-check and re-evaluate abnormal findings, and assists in bringing medical questions to a prompt decision. Daily patient-physician contacts are of advantage to both, and lead to the single most important aspect of the periodic program—the final conference between patient and physician. A personalized report—including recommendation, advice in health and hygiene, and the giving of reassurance as needed—is the foundation for an individualized and constructive health maintenance regime.

Where medically indicated, great advantage is gained by starting measures for health improvement at once and before the examinee is back at work. Some follow-up failures are traced to delays and the human propensity to put it off. With the patient's private physician and the industrial physician lies the responsibility, thereafter aided by such help as may be afforded from the complete medical reports forwarded from the clinic and the examining physician.

"Weighing In"

SOME of the physical defects our medical program has revealed will be of interest. Thus far we have examined about 1,000 people in our new plant since we started operations in 1954. In that time four early cancers have been detected and surgically corrected; 24 hernias were found which were unknown to the patient; 15 thyroid gland tumors have been discovered. Surgery was recommended in all these cases, and in two patients the abnormality proved be early cancer of the thyroid gland; nine skin tumors have been removed as a result of the doctor's recommendations. In addition to all these, we have been taking a rather firm stand on the problem of obesity. This was a touchy subject with most overweight individuals, but today the employees are giving our weight reduction program their real support, and it is a common sight to see workers and supervisors alike voluntarily "weighing in" at the dispensary to check their progress.

—From "The Expanding Scope of Industrial Medicine" by H. W. TULLOCH, Manager, Employee and Plant Community Relations, General Electric Company, Specialty Control Department, Waynesboro, Virginia, in *American Association of Industrial Nurses' Journal*, June, 1956.

Industrial Medical Association

President's Page

THE EXPANSION of industrial medicine long ago demonstrated that it wasn't to be halted at the boundaries of any nation. Industrial medicine is international. It is highly desirable that its practitioners in one country should be kept informed as to activities in other countries. The readiest access to such information is through the official congresses or conferences in other countries. In order, therefore, that we may profit in this respect, it appears desirable that official representatives of the Industrial Medical Association be designated to represent this Association at national meetings the world over, and likewise at certain regional meetings in this country.

Accordingly, with the approval of the Executive Committee, I have, as of now, appointed representatives to the Twenty-First Anniversary Meeting of the Association of Industrial Medical Officers of Great Britain which is to be held in London in late September, to the First Inter-American Conference on Occupational Medicine and Toxicology to be held at University of Miami in early September, to the Ninth Annual Health Conference for Business in Industry at Houston, Texas, September 20-22, and to the Third Annual Pacific Northwest Industrial Health Conference at Portland, Oregon, in mid-September. These meetings are on the near horizon. Others will be selected as appointments become timely.

In addition to giving us the opportunity to express a friendly interest in the work of other organizations, and to keep in contact with their activities, this also offers an excellent means of letting the world in general know about the Industrial Medical Association. Each IMA representative is being given a letter of greeting to the President of the organization sponsoring the meeting he attends.

We are also inviting the heads of the various organizations abroad and in this country to be present at our 1957 Annual Industrial Health Conference in St. Louis next April.

It will be this Association's policy to continue this development of liaison with organizations in our field wherever they may be, and to have an official representative attend at least their principal meetings wherever they are held. We know this will be beneficial to all concerned—in addition to which it has certain potentials of great value in the development of international good will.

E. S Jones M.D

Association News

At the Forty-First Annual Meeting of the Industrial Medical Association at Convention Hall in Philadelphia, Wednesday, April 25, during the Industrial Health Conference, the following IMA members were designated Fellows:

William Francis Ashe, M.D., Columbus, Ohio.

Herbert Raymond Atherton, M.D., Chicago, Illinois.

William Frederick Becker, M.D., Chicago, Illinois.

Paul Beddoe, M.D., Los Angeles, California.

Harold Bellin, M.D., Albany, New York.

Richard Jacques Bennett, M.D., Chicago, Illinois.

Zina Braden Bennett, M.D., Detroit, Michigan.

Merrill Philip Benoit, M.D., Anderson, Indiana.

Bertram Louis Bersche, M.D., St. Louis, Missouri.

John Gordon Bielawski, M.D., Detroit, Michigan.

John Wendell Borino, M.D., Newark, New Jersey.

John Edward Boysen, M.D., Dayton, Ohio.

Ralph McKay Lashelle Buchanan, M.D., Phillipsburg, New Jersey.

Jesse Gordon Burdick, M.D., Pasadena, Texas.

Edward Francis Buyniski, M.D., Cincinnati, Ohio.

Angelo Daniel Calabrese, M.D., Berkeley Heights, New Jersey.

Frank Anthony Calderone, M.D., Great Neck, Long Island, New York.

Charles Junior Clark, M.D., Dearborn, Michigan.

French Hood Craddock, Jr., M.D., Sylacauga, Alabama.

Thomas Hugh Davis, M.D., Tulsa, Oklahoma.

Edward James Dehne, M.D., Army Chemical Center, Maryland.

Alvin Henry Diehr, M.D., St. Louis, Missouri.

Joseph Charles Donchess, M.D., Gary, Indiana.

Jesse Jewell Farnsworth, M.D., Kansas City, Missouri.

Rivington Fisher, M.D., Columbus, Ohio.

John Florence, M.D., Oklahoma City, Oklahoma.

Dennis Joseph Flynn, M.D., Kenmore, New York.

George Francis Fordham, M.D., Mullens, West Virginia.

Edwin Clarence Funsch, M.D., St. Louis, Missouri.

Carl Hamann Gans, M.D., Morenci, Arizona.

John Daniel Gillis, M.D., Los Angeles, California.

Saul Kaiser Gluckman, M.D., Newark, New Jersey.

David Henry Goldstein, M.D., New York, New York.

Stuart Alexander Good, M.D., Kenmore, New York.

Thrift Gene Hanks, M.D., Seattle, Washington.

F. Minton Hartz, M.D., Evansville, Indiana.

John Henderson, M.D., New Brunswick, New Jersey.

James Howard Holmes, M.D., Toledo, Ohio.

Henry Forbush Howe, M.D., Cohasset, Massachusetts.

James Paul Hughes, M.D., Columbus, Ohio.

Nathaniel Michael Japhe, M.D., New York, New York.

John Frank Jellema, M.D., Grand Rapids, Michigan.

Thomas Stroup Jenike, M.D., Cincinnati, Ohio.

Robert Pearson Jessup, M.D., Syosset, Long Island, New York.

Charles Harlan Johnston, M.D., Des Moines, Iowa.

John Howard Johnston, M.D., Hartford, Connecticut.

John Frank Kilgus, Jr., M.D., Hartford, Connecticut.

Roy Clifton Kingswood, M.D., Detroit, Michigan.

Karl Vivian Kitzmiller, M.D., Cincinnati, Ohio.

Irvin Klein, M.D., New York, New York.

Donald Brewster Knowles, M.D., Chicago, Illinois.

Samuel Irving Kooperstein, M.D., New York, New York.

Emma Dowling Kyhos, M.D., Nutley, New Jersey.

Thomas Francis V. LaPorte, M.D., Bristol, Connecticut.

George Volney Launey, M.D., Dallas, Texas.

John Gabriel Lione, M.D., Cranford, New Jersey.

Ernest Wilber Logan, M.D., Pittsburgh, Pennsylvania.

John Francis Long, M.D., Arlington, New Jersey.

Wilbur Foster MacDonald, M.D., Schenectady, New York.

Ian MacLachlan, M.D., Syracuse, New York.

Otto Tod Mallery, Jr., M.D., Ann Arbor, Michigan.

Martin Martinus, M.D., Grand Rapids, Michigan.

Fulton Massengill, M.D., Newark, New Jersey.

Bernard Aloysius McAleer, M.D., Pittsburgh, Pennsylvania.

Earl Duwaine McBride, M.D., Oklahoma City, Oklahoma.

George Homer McDonald, M.D., St. Louis, Missouri.

James Hartford McDonough, M.D., Rome, New York.

Harvey George Mensch, M.D., Harrison, New Jersey.

Harold Irving Meyer, M.D., Chicago, Illinois.

George Grover Minschwaner, M.D., Trenton, New Jersey.

William Arthur Moore, M.D., Cincinnati, Ohio.

Paul Leo Neiswanger, M.D., Grand Blanc, Michigan.

Andrew Edman Ogden, M.D., Trenton, New Jersey.

James Donald Peirce, M.D., Indianapolis, Indiana.

Joseph Anthony Pessolano, M.D., Albany, New York.

John Joseph Phair, M.D., Cincinnati, Ohio.

Walter Prusait, M.D., Chicago, Illinois.

Louis Anthony Reuter, M.D., St. Louis, Missouri.

Edward Mathew Rotarius, M.D., Grosse Pointe Woods, Michigan.

John Carroll Ruddock, M.D., Los Angeles, California.

Paul White Rush, M.D., Argo, Illinois.

James Lincoln Salomon, M.D., Highland Park, Michigan.

Ralph Frederick Schneider, M.D., New York, New York.

John Messe Schwartz, M.D., Flint, Michigan.

Raymond Ephraim Seth, M.D., Seattle, Washington.

Maynard Irwin Shapiro, M.D., Chicago, Illinois.

Jack George Siegel, M.D., Newark, New Jersey.

Allan Peter Skoog, M.D., Chicago, Illinois.

Kenneth Wallace Smith, M.D., New York, New York.

Louis Wells Staudt, M.D., Detroit, Michigan.

William Edward Steele, M.D., Seattle, Washington.

Arthur Edward Sulek, M.D., Milwaukee, Wisconsin.

Raymond Charles Sunderman, M.D., St. Louis, Missouri.

RAYMOND ROBERT SUSKIND, M.D., Cincinnati, Ohio.

WILLIAM GARLAND TALMAGE, M.D., Succasunna, New Jersey.

JOHN LAWTON TYLER, M.D., Staten Island, New York.

OSCAR ULAN, M.D., Newark, New Jersey.

MATHILDA ROSEMARY VASCHAK, M.D., North Plainfield, New Jersey.

ARTHUR JOHN VORWALD, M.D., Detroit, Michigan.

JOHN HOWARD WEIDNER, M.D., Dearborn, Michigan.

BEVERLY KEMPER WESTFALL, M.D., Indianapolis, Indiana.

PAUL JONES WHITAKER, M.D., Milwaukee, Wisconsin.

WILLIAM WORK WIDDOWSON, M.D., Murray Hill, New Jersey.

RALPH DAVID WIGENT, M.D., Pontiac, Michigan.

JESSE WILBUR YOUNG, M.D., Kansas City, Kansas.

The Subcommittee on Noise in Industry

THE following is a brief statement of the accomplishments of the Subcommittee on Noise in Industry and its Research Center.

GENERAL ACTIVITIES:

1. As a result of the work of the Subcommittee on Noise in Industry the interest in "hearing conservation" has become widespread among doctors, safety engineers, industrial hygienists, legislative bodies, management, and labor.

2. The research and educational activities of the Subcommittee on Noise in Industry have had many direct effects on recent compensation legislative proposals, and particularly on disability rating scales for hearing loss.

3. The work of the Subcommittee on Noise in Industry has definitely increased the knowledge of the medical profession throughout this country and abroad.

4. There have been very few, if any, medical advisory groups related to the noise problems that have not had direct representation from the Subcommittee on Noise in Industry.

SPECIFIC RESULTS related to the general activities outlined above:

1. (a) Many of the large companies are organizing hearing conservation programs based on advice from the Subcommittee on Noise in Industry. (b) Many of the moderate- and large-sized industrial plants have had complete noise surveys performed. (c) The audiometric test programs are becoming reasonably well standardized as to technique and test environment in all the larger industries. (d) The Research Staff of the Subcommittee on Noise in Industry has completed a standard hearing conservation data card which has been accepted by many industries for keeping accurate and complete records.

2. (a) The recent changes in the Wisconsin compensation laws have been based in part on the advice of the Subcommittee on Noise in Industry. (b) The ruling of the New York State Workmen's Compensation Board on the "six months waiting period" prior to making final awards on hearing loss claims is based on the opinion of the Subcommittee on Noise in Industry.

3. (a) Much of the informed opinion of the medical profession is a direct result of publications, lectures and appearances at various meetings, courses and conferences by members of the Subcommittee on Noise in Industry and its Research Staff.

SPECIFIC ACTIVITIES:

1. The members and staff of the Subcommittee on Noise in Industry have published guides to assist industry and physicians in planning a hearing conservation program. Over 25,000 of these guides have been distributed through various channels.

2. The Subcommittee on Noise in Industry has organized and established a Research Center that is collecting and compiling data on the relations of hearing loss to noise-exposure.

3. The members and staff of the Subcommittee on Noise in Industry have made notable contributions to the Z24-X-2 report, "The Relations of Hearing Loss to Noise Exposure," the report of the Committee of Consultants on "Occupational Loss of Hearing" to the New York State Workmen's Compensation Board, and the report of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology on the "Principles for Evaluating Hearing Loss."

4. The Research Staff of the Subcommittee on Noise in Industry has completed a Hearing Conservation Data Card which may be used for recording data relevant to the "noise-hearing loss" problem.

5. The Research Center has collected nearly 50,000 records from various industries as part of its program to establish a central file for data pertinent to the "noise-hearing loss" problem.

6. The majority of the available ear protectors have been evaluated by a standard technique evolved by the Staff of the Subcommittee on Noise in Industry. Samples of new protective devices are being tested regularly as they become available. Several of these devices have been evaluated while in use by industrial workers with "on the spot" checks. Their effect on the reversible auditory threshold shift produced by one "work-day" exposure to noise has also been studied. These data have been submitted to an American Standards Association committee for standardization purposes.

7. The reversible auditory threshold shift produced by one "work-day" exposure has been measured on, approximately, 500 workers from various local companies.

8. The Research Staff of the Subcommittee on Noise in Industry has conducted two hearing surveys at the Wisconsin State Fair. The results of these will be used to study (a) the relations of hearing loss to noise-exposure, (b) the relations of pure tone and speech reception thresholds, (c) the feasibility of using sentence material as a speech test for evaluating disablement due to hearing loss, (d) the relation of automatic audiometry to industrial audiometry, and (e) the need for a new normal hearing reference level.

SPECIFIC FINDINGS:

1. Analyses of pre-employment hearing tests made on industrial workers have demonstrated that 25% of these workers hired by any industry have a significant hearing loss prior to application for a job.

2. The 1954 Wisconsin State Fair Survey revealed that, approximately, 15% of the population of Milwaukee County has a hearing loss greater than 25 db at 1000 cps.

3. The temporary threshold shift (reversible auditory threshold shift) studies have shown that the threshold shift due to one "work-day" exposure

is related to hearing loss, noise experience, work cycle, and length of "work-day" exposure.

4. The reversible threshold shift studies plus several analyses of large numbers of industrial audiograms have shown that the reversible shift contaminates routine audiometry and thereby produces invalid records of permanent hearing loss. This effect is carried over into our research by introducing considerable inconsistency into the industrial data, thus limiting their usefulness.

5. The reversible or temporary threshold shift studies have indicated that presently available ear protectors prevent the threshold shift when used in the average industrial noise.

6. Our research has shown that ear protection is not related to the brand or type of ear protector but rather to the fit and use of the devices.

7. In an industrial situation noise-induced hearing loss is affected equally by duration of exposure, over-all level, and frequency composition of the noise.

8. Because of the limits placed on research by the circumstances found in industry, many thousands of industrial records will be necessary to assure valid samples on each of the parameters of the "noise-hearing loss" problem.

9. Our studies at the Wisconsin State Fair have confirmed the presbycusis curves that were proposed in the American Standards Association report, Z24-X-2.

10. The Wisconsin State Fair Surveys have confirmed the reference level used to designate normal hearing, which was prepared on the basis of a population survey made by the U.S. Public Health Service in 1935-36.

11. The British have recently suggested a new normal hearing reference level for international use. Our studies, again at the Wisconsin State Fair, are in complete agreement with the British findings. This suggested reference level is based on carefully controlled laboratory type studies in contrast to the earlier U.S. Public Health Service survey type study.

12. The very important decision of the State of Wisconsin to allow no compensation for hearing losses of less than 17 db average at 500, 1000 and 2000 cps is a direct result of the recommendations of the Subcommittee on Noise in Industry.

—CLARENCE LEE LLOYD, M.D.

Books

Enough

FUNCTIONAL OTOLOGY—The Practice of Audiology: MORRIS F. HELLER, Springer Publishing Company, Inc., New York, 1955, pp. 225, $5.50.

Even though it goes against the grain, the industrial physician finds need for more knowledge of otology. This is a consequent expanding concern in noise, noise deafness, audiometry, ear stopples, hearing rehabilitation, and compensation claims alleging impairment from noise. In this book there is no indication that the industrial physician ever was in mind as the author went about his task. Instead, the work is for the practicing otologist but the emphasis is not on otic diseases and their pathology but on the facilities and procedures requisite to the testing of the ear functions. It so happens that those are the very things that concern the industrial physician in his limited obligations in the realm of otology. The skilled specialist in otology is likely to frown upon this publication as a primer. For the industrial physician this is no primer but a finality—a sufficiency.

Safety Through Education

THE CENTER FOR SAFETY EDUCATION PROGRAM AND SERVICES: New York University, Division of General Education, pp. 24 (no price or publication date shown).

This brochure describes the history, program and services of an outstanding agency for safety education far too little known to the world of occupational health. As to its task, the brochure states: "The purpose of the Center for Safety Education, in common with a variety of other social agencies, is to translate the record of accidents into the silent statistics of safety. The job has been described as 'the safe adaptation of the population of the United States to the increasingly hazardous conditions of modern life.' The Center undertakes, therefore, varied educational and training activities which reach into all areas of living—work, home, school, recreation, and driving.

"People in the field of accident prevention live with these figures burned into their consciousness. They are not a proper index to industrial and human progress. The Center and similar educational centers exist because of a deep belief that men can be taught to live safely.

"Measured against the dimension of the problem, such efforts may seem small. But education multiplies its own effects. As more and better education develops, becomes more widespread, and directs its attention to the present adult population as well as to oncoming generations, the number of accidental deaths and injuries will decrease. The size of the problem can only challenge those in the field of safety to be more effective and imaginative.

"This is the Center's task: through research and teaching to do its part to bring about a safer way of life."

As to careers in industrial safety, this language is found: "Industry needs and will continue to need men who can manage the whole program of loss prevention, of which the prevention of accidents is an integral part. They must be men who can think and act on the executive and directive level, men who can use the opportunities provided by work in loss prevention to become intimately acquainted with the totality of operations, and who can use the loss ratio as an index to efficiency. Such men are needed in top executive positions.

"Safety engineers, safety supervisors, inspectors, and accident data analysts will continue to be needed, and their progress in reaching for the top will depend upon knowing more than their own jobs and upon their growth as executives."

This Center is dedicated to the training of leaders in safety through education.

Current Handbook

ACCEPTED DENTAL REMEDIES 1956: American Dental Association, Chicago, 1955, pp. 206, $2.00.

"Accepted Dental Remedies" is revised annually by the Council on Dental Therapeutics of the American Dental Association, Chicago, in order to permit the inclusion of new information. This publication is designed to serve as a current handbook of dental therapeutics. It also contains a list of therapeutic products marketed in the United States which are acceptable to the Council on Dental Therapeutics.

INDUSTRIAL MEDICINE AND SURGERY

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Problem Clinics

AT ONE TIME or another it becomes the assigned duty of the industrial physician or the occupational health nurse to arrange a program for the meeting of a professional society. In the course of preparation, planning sessions of appropriate committees are held, and, after extensive correspondence, the speakers appear, and the papers are read or the panels have their say, and the captains and the kings depart without much that is new. The format has changed little over the years.

The subject content of the program usually reflects the particular interests of the chairman, and not always are the listening desires of the audience in tune with the text or theme of the session. Two areas inviting observation of this mismatching of items offered and items accepted have been seen in both national and regional conclaves. The first of these is encountered in the types of interrogations presented during the so-termed question or discussion period. Most often these embark tangentially from the core of the matter at hand, and land squarely on those issues of greatest significance to the attending group. This occurs with such frequency that one wonders if the present configuration of our society meetings is rendering a service to those who come to hear the words of the masters. Are these conferences providing any solutions to the problems besetting those engaged in the promulgation of industrial health services?

At a recent national meeting that concerned itself with the medical direction given to the nurse in industry, the thoughts verbalized by the speakers were succinct, logical, and fully adhering to the theme. Of greater interest were the questions sent forward to the panel members for their reply. It is to these expressions that the ear must be attuned to learn of the friction spots in the programming of industrial health.

Questions of familiar ring have appeared at other meetings, posed by comparably puzzled and interested persons. For example, here are a few: "What position should the nurse take if the employee has no family physician?" "I work alone without medical direction. How can I convince management of the importance of having a doctor?" "How does a nurse induce the company's physician to prepare a manual of procedures for her?" Presumably, the concepts voiced in reply fail to dispel the questioners' difficulties, for the same queries and the same proposed solutions have been heard often by the faithful conference goer.

The second situation that bespeaks the need for listener-centered forums at our annual society get-togethers has been the success of an unstructured type of program called a "Problem Clinic," which has been utilized in some regional workshops in Oklahoma and Texas. Representatives of the disciplines comprising the industrial health team are asked to serve as resource persons. Questions from the audience are presented to them by a moderator who attempts to synthesize the session of an hour and a half into a sound, valuable, learning experience. This kind of program is of worth because the ideas originate with the group who listen, the ideas in response are formulated on the spot, and the material covered is completely within the area of interest of those speaking and those hearing. This procedure exemplifies the democratic way in group thinking, and permits the establishment of a focus appealing to all in session.

In essence, it is suggested that if more substantial recording were made of the questions presented at conferences, the greater would be the knowledge of the operational difficulties of the medical or nurse practitioner in industry. Further, in the permissive, audience-participating, free-flowing group session one detects a greater satisfaction on the part of the member who had questions and was willing to travel, and could share in the discussion of his own quandary.

There are "*new* ways to better meetings." Should those in occupational health be the last to emerge from the tried, but not so true, ways of yesterday? —J. S. FELTON, M.D.

Silo Disease—Old and New

IN 1914 Hayhurst and Scott, reported in the *Journal of the American Medical Association* (LXIII, 1570, 1914), four sudden deaths in a silo at the Athens (Ohio) State Hospital on September 19, 1914. The victims appeared dead within about five minutes after entering the partly-filled silo. Since that time industrial physicians have accepted this type of accident (not an occupational disease) as characteristic of possible exposure in silo filling. In the ensuing years numerous deaths have been reported, all in the autumn of the year. Such accidents have been attributed to asphyxiation by carbon dioxide arising from fermenting ensilage. Hayhurst and Scott included the results of chemical analyses of the silo gases, which analyses established the presence of carbon dioxide in excess of 38%. Until lately such sudden deaths have been ascribed to the asphyxiant action of carbon dioxide.

Now arises the possibility of a second form of silo damage from a gas. In the lay press, including *Farm Journal* and *Country Gentleman* (June, 1956), and at least one scientific publication (Delaney, Schmidt and Stroebel in *Proc. Staff Meetings Mayo Clinic*, 31, 189 (April 4) 1956) nitrogen dioxide has been held culpable in the causation of a serious pulmonary affection growing out of silo work. The scientific publication refers to one fatal case, the lay press to more than one. The source of the nitrogen dioxide is attributed to the reduction of the nitrates in corn related in part to nitrogen fertilizers. The lay press indicates that the deaths were long delayed (one month) without evidence of any early damage. It is well known that nitrogen dioxide is a profound pulmonary irritant provoking after delay of only a few hours direful pulmonary edema which may be followed by pneumonitis and still later by obliterative bronchiolitis.

Assuming the validity of the contention of nitrogen dioxide damage (it being claimed that nitrogen dioxide has been demonstrated in the silo atmosphere), it follows that now there may exist two pronounced threats for the silo laborer. However, it does not follow that the earlier numerous cases attributed to carbon dioxide were not in fact destroyed by that chemical. It is almost unthinkable that sufficient nitrogen dioxide would have appeared in silos to have brought about deaths in five or 10 minutes. The characteristic action of nitrogen dioxide involves a period of delay in which pulmonary edema appears. Equally it is definite that deaths one month after exposure may not be linked with the simple asphyxiant carbon dioxide. After carbon dioxide exposure, death occurs quickly or recovery is complete. Well it may be that two silo diseases have arisen. Clear is the need for adequate investigation as to what gases arise, how much, and under what circumstances. In the meantime, the age-old preventive measures are as much in need as ever:

1. The sectional doors customary for silos should be kept open level-by-level during filling.

2. The ensilage blower which fills the silo always should be kept in operation whenever any worker is on the inside, and prior to entry should be operated for 10 to 15 minutes. The blower itself constitutes a ventilating device.

3. After the silo has been nearly filled, and the filling process discontinued, the silo should not be entered for about 10 days. During that time the plant fermentation will have been completed and the gases will have been diluted or dissipated. By actual tests it is known that carbon dioxide gas will have diminished to non-threatening levels. As to nitrogen dioxide there is conjecture.

Not All Who Ought To Be

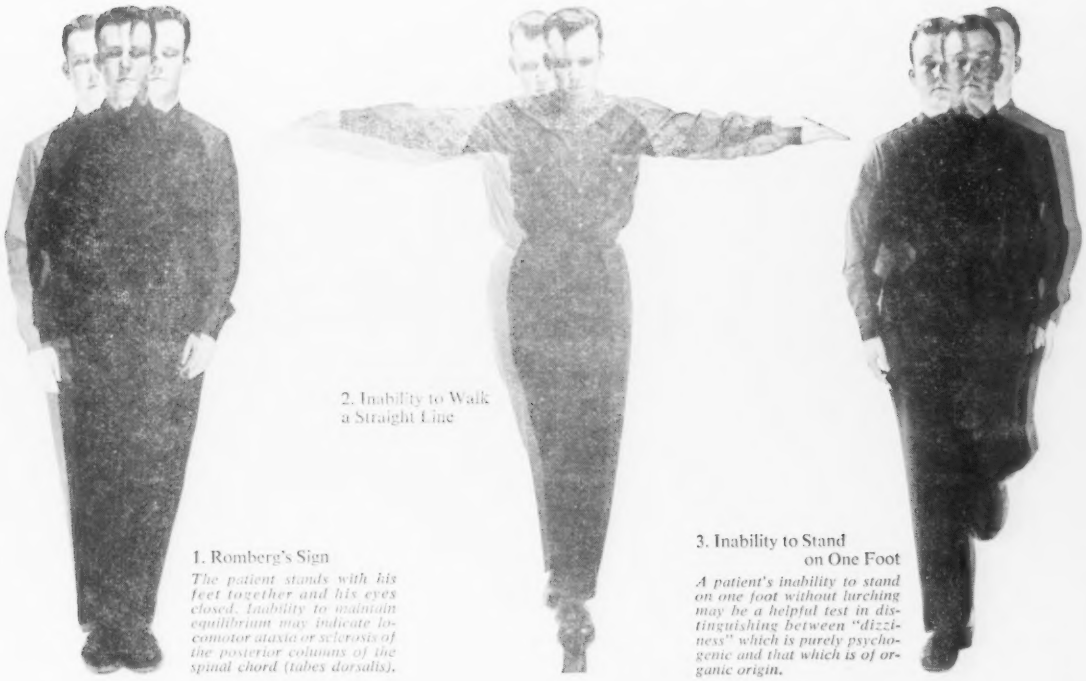
THE current "Who's Who in America" (Volume 29, for 1956-1957) lists some 49,500 biographies, chiefly of United States citizens. Large as that number is, it represents only about one-third of one per cent of the total population; those included live in a sparsely inhabited atmosphere.

Mindful of the status of industrial medicine as an important specialty, this Journal was curious as to the number of IMA members whose names appear in this distinguished company. A careful checking disclosed 72—practically all career people in industrial medical work. This identification, however, does not appear as having furnished any special basis for their selection. All are distinguished, each in his own right as an individual. But, like all others, they were selected no doubt with some consideration for their position, attainments, background, and importance in the work that goes on around them.

It is gratifying to find this many IMA members included in this important compendium of biographical data. But on any basis of qualification, by no means all of them who ought to be in "Who's Who in America" are there now.

Notes on the Diagnosis and Management of "Dizziness"

False Dizziness



1. Romberg's Sign

The patient stands with his feet together and his eyes closed. Inability to maintain equilibrium may indicate locomotor ataxia or sclerosis of the posterior columns of the spinal chord (tabes dorsalis).

2. Inability to Walk a Straight Line

3. Inability to Stand on One Foot

A patient's inability to stand on one foot without lurching may be a helpful test in distinguishing between "dizziness" which is purely psychogenic and that which is of organic origin.

False dizziness is a sensation of sinking or lightheadedness which is often of psychogenic origin. It should be distinguished from true "dizziness" or vertigo[1] in which there is a definite whirling, moving sensation.

Unsteadiness, lightheadedness and similar manifestations of false dizziness[2] may be psychogenic or the result of arteriosclerosis, hypoglycemia, drug sensitivity and general metabolic disturbances such as anemia and malnutrition. Hypertension is often the cause of the symptoms.

Psychogenic dizziness probably originates at the highest brain centers. It may be described as a sense of uncertainty with occasional mild lurching but not to the point of falling. In these patients there is no nausea, no disturbance of vestibular pathways and otologic and neurologic examinations are negative. The sensation is unaffected by head movement. Symptoms usually disappear[3] with complete rest.

Dramamine® has been found highly effective in many of the conditions already mentioned. Maintenance therapy with Dramamine will often keep the patient from becoming incapacitated by his condition.

Dramamine is also a standard for the management of motion sickness and is useful for relief of nausea and vomiting of fenestration procedures and radiation sickness and for relief of "true dizziness" of other disorders.

A Future Therapeutic Note will cover: Ménière's Disease.

Dramamine (brand of dimenhydrinate) is supplied in tablets (50 mg.) and liquid (12.5 mg. in each 4 cc.). G. D. Searle & Co. Research in the Service of Medicine.

1. Swartout, R., III, and Gunther, K.: "Dizziness:" Vertigo and Syncope, GP *8*:35 (Nov.) 1953.
2. DeWeese, D. D.: Symposium: Medical Management of Dizziness. The Importance of Accurate Diagnosis, Tr. Am. Acad. Ophth. *58*:694 (Sept.-Oct.) 1954.
3. Kunkle, E. C.: Central Causes of Vertigo, J. South Carolina M. A. *50*:161 (June) 1954.

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News, Comment, Opinion

WE HEARD an advertising man complain the other day that "they're taking all the fun out of our business." He blamed psychologists, market analysts, researchers and statisticians.

—From "Spirit vs. Science," by WILLIAM A. ARTER, in *Printers' Ink*, June 15, 1956.

Co-sponsored Program

AT THE National Safety Congress to be held in Chicago this October, the A.M.A. Council on Industrial Health is co-sponsoring a program with the American Society of Safety Engineers and the Occupational Health Nursing Section of the National Safety Council.

Where to Begin?

THE administration's proposal for voluntary major medical health insurance for Federal workers (H.R. 11630, 11633) has been getting mixed reactions from witnesses before the House Post Office Committee. The American Hospital Association, the Cooperative Health Federation and Group Health Association, Inc., of Washington argued that the bill was starting at the wrong point. There should first be basic coverage, supplemented later by catastrophic insurance, they argued. A witness for nine Federal workers unions testified for the bill, claiming it was a good starting point for later benefits.

—*AMA Washington Letter*, July 6, 1956.

In Pennsylvania

PENNSYLVANIA'S industrial health apparently was fairly well checked last year. A spokesman for the State Department of Health this week told Pennsylvania News Service that during the past year representatives of the Department visited a total of 7,545 industrial plants having 1,309,000 employees, to check both working and industrial health conditions. In other phases of industrial health checking a total of 203 engineering studies and 116 air pollution investigations were made. Chest x-rays among industrial workers totaled 31,749; dental x-rays numbered 2,378. Industrial health nursing visits numbered 120. Exposure to hazardous materials or conditions were investigated in 6,066 plants, where 1,450 recommendations to effect improvement of working conditions for some 45,860 employees were made. The Department disclosed that the Atomic Energy Commission had informed it that 350 authorizations were made for the use of radioisotopes. Potential radiation hazards were investigated in 77 establishments, which included industrial plants, research laboratories, and hospitals.

—*Hatboro, Pennsylvania, Public Spirit*, April 19, 1956.

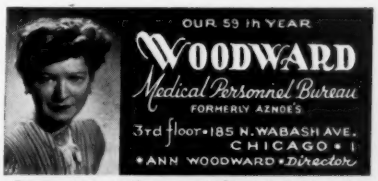
Heart in Industry

THE INDUSTRIAL Health and Rehabilitation Committee of the Chicago Heart Association has been divided into two Committees; one on Industrial Medicine, the other on Rehabilitation. . . . Investigation of death cases involving cardiacs for the past three years is now in the preliminary stages, in cooperation with the Industrial Commission of Illinois. It is hoped to discover exactly what these cases cost industry. The fourth heart-in-industry Conference will be held on November 28, 1956, in cooperation with the Chicago Association of Commerce and Industry. This Conference will cover two problems facing industry: that of the new young employee who has a history of rheumatic fever, and that of the old employee who has acquired a history of hypertension and/or coronary heart disease. The work Classification Unit has processed 111 cases since its opening in March, 1954, and many of these have returned to work. Funds have been set aside by the Heart Association for anyone needing this service who cannot afford the fee. Greater use of the unit is being urged upon private physicians and upon small industries which do not have a Medical Department.

—*Chicago Heart Association Bulletin*, June, 1956.

Course at Columbia

THE FACULTY of Medicine, Columbia University, announces a course in Occupational Medicine to be given from 9:00 to 10:00 on Saturday morning, September 22-December 1, 1956, in the College of Physicians and Surgeons, 630 West 168th Street. Members of the staff of the Division of Occupational Medicine of the School of Public Health and Administrative Medicine will conduct the course. To a large extent, discussions will be based on actual cases.



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SITUATIONS WANTED

Medical Director: (a) 7 years, Med Dir lge important industrial med facility; now seeks larger Company, greater responsibility; middle 30's; any locality, prefers East.

Medical Director: (b) Exceptionally qual to organize & dir lge indus health program; has Doctorate, Industrial Medicine; one of few so distinguished; degrees from leading schools; 4 yr fellowship, preventive & indus med; several yrs, assoc chief, indus & preventive med, medical schl; references unite in excellent commendations; any locality.

Medical Director: (c) Diplomate, internal medicine; Board eligible, cardiology; M.S. (medicine); 6 yrs, very successful private practice, medicine & faculty member, univ med school, (cardiology); now interested in indus med preferably as career; only interested in Philadelphia area, age 35.

Associate Medical Director: (d) Seeks connection with emphasis on preventive med; several yrs, staff phy, indus med dept, lge indus clinic; M.S. (public health); Board qualified, (prev med); middle 30's.

Industrial Hygienist: (e) 5 years, dir, Health & Safety, one of America's major companies; exceptionally well qual to develop, extend program in indus hygiene, occupational, public health or safety; M.S. chemistry; recommended without reservation.

Staff Physician: (f) Seeks indus med as career; any large city; 2 yrs, medical officer; 3 yrs, priv medical & surgical pract; early 30's; class "A" graduate, N.Y. or N.J.

Staff Physician: (g) Past 4 years, successful priv general pract; now prefers indus med with regular hours as career; any locality but prefers East or Southeast.

Staff Physician: (h) Prefers indus post on West Coast; residencies, 1 yr each, gen'l & orthopedic surg; 3 yrs, indus phy, U.S. Arsenal, age 32.

POSITIONS OPEN

Medical Director: (a) With demonstrated ability; complete chge, lge plant; metal stampings & assembly; univ city; New England.

Medical Director: (b) Complete charge all policies, organization, operation new med depts in 21 plants, units of major Co; to $25,000; San Francisco area.

Medical Director: (c) Newly created post; largely preventive med; medical care of all city employees, (3500); oppor academic post; city 500,000; Midwest.

Physician: (d) Administration of in-plant medical facility; aircraft industry; Calif.

Assistant Medical Director: (e) Plant of major company; 6000 employees; few miles from Boston; to $12,000; exceptional oppor to advance in this Co having 34 regional plants, American and foreign.

Physician: (f) Responsibility for physical exams, preventive hlth program & minor accident surg; Illinois plant of leading Co.

Physician: (g) To work 2 weeks out of 6 with mobile unit traveling in field; home ofc work phy exams, some dispensary & diagnostic & adm duties; lge Oil Co; SW.

INTERNIST: (h) Indus diagnostic clinic; blood chemistry lab; x-ray; rehabilitation center; ample study prog and hosp affil; leading industrial facility; $12,000; lge city; East.

Staff Physician: (i) Important med facility; well equipped dispensary; will run own dept without interference from central office; lge city; univ med center; East.

The schedule is as follows: September 22, "History, Scope, Objectives and Practice of Occupational Medicine"; September 29, "Industrial Toxicology—General Principles"; October 6, "Toxic Metals I"; October 13, "Toxic Metals II"; October 20, "Toxic Solvents I"; October 27, "Toxic Solvents II"; November 3, "Toxic Dusts"; November 10, "Toxic Gases"; November 17, "Ventilation, Lighting, Noise"; November 24, "Radiation Hazards"; December 1, "Written Examination."

Aviation Medicine Course

THE THIRD Annual Postgraduate Course in Aviation Medicine for Physicians and Scientists will be held at the Health Center, Columbus, Ohio, September 10-14, 1956. This refresher course is designed for Medical Directors responsible for company aviation programs, and others interested in the health aspects of flying. Basic information will be brought up to date, but chief emphasis will be upon new material not covered in the previous annual programs. Additional time will be given to conference-type discussions, led by participating lecturers, of problems submitted by those enrolled in the course. Field visits to the Medical Research Unit at Wright Air Development Center, and to the Medical Research Laboratory, Civil Aeronautics Administration, are scheduled. Among the program subjects will be: visual fatigue; effective communication and pilot fatigue; chronologic vs. physiologic age; causes of sudden and unexpected death; physiology of hearing; noise and vibration; cabin pressure problems—EENT, cardiorespiratory, peripheral vascular; toxicology—on the ground and in the air; the doctor and the pilot—ethical principles guiding physician-employee relations; physical standards for flying and ground personnel; organization of the airline Medical Department; and medical economics of the aviation industry. Address inquiries to: WILLIAM F. ASHE, M.D., Chairman, Department of Preventive Medicine, Ohio State University Health Center, Columbus 10, Ohio.

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new reverse-cutting
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Too Much Salt

WHAT IS the present opinion relative to the indiscriminate use of salt tablets by lay people in industry? *Answer* — The need for salt may be indicated in plants where employees work in an environment of extreme heat and where there is medical supervision and control of the use of salt. The indiscriminate use of salt by laymen in other work is usually unnecessary and may be harmful. An employer should have the advice of his Medical Officer as to the need in his plant before salt dispensers are permitted on the property. It is this availability of salt to the laymen that permits him to use salt whenever he feels like it and too often. This is not only wasteful, but it is a poor policy for the employer to provide any drug or article to be used internally. If the employee wants to use salt on his own volition, let him provide it with his lunch. This will avoid a question of legal liability arising from an employee's misuse of a product furnished by the employer that might aggravate a pre-existing physical ailment and be the basis of a damage claim.

—From "Queries and Minor Notes," *J.A.M.A.*, June 30, 1956.

No Cancer

THE NEWEST report of the British Empire Cancer Campaign tells that several long-term and separate experiments with tobacco smoke and condensates on laboratory animals failed to produce cancer either by prolonged painting, injection, or forced inhalation. No cancers were produced by these different experiments: painting skins of mice with cigarette tar; injecting cigarette tar under the skins of rats and into the bronchus of hamsters; injecting tars made from cigarette paper into animals; introducing cigarette tars into the esophagus of mice. The results of the experiments were summarized in the official British Empire Cancer Campaign report as follows: "Attempts have been made to produce cancer in the lung of rats by the direct injection of tobacco tar and also of various carcinogens into the lung. At another centre cigarette smoke tar and resin have been injected into the lungs of mice; the few tumors that developed were regarded as spontaneous and in no way due to the effect of the injected material. Experiments set up to test for carcinogenicity in cigarette tar by its application to the skin of the mouse have now been completed, with negative results. No malignant tumors were obtained either with the whole tar or with the neutral fraction. Nor have any tumors as yet appeared in rats injected subcutaneously with fresh cigarette tar, or hamsters which had cigarette tar injected into the bronchus; whilst in other experiments animals injected subcutaneously with the tar resulting from cigarettes made entirely from cigarette paper have shown no tumors. In other experiments to test crude tars condensed from cigarette smoke, no skin tumors were obtained in mice painted twice weekly with a 20% solution of the tar in acetone. Tar obtained in a smoking machine was introduced into the esophagus of mice, a route of administration which has given a high yield of lung cancer after the introduction of a known carcinogen; no definite carcinoma of the lung has developed to date."

—Tobacco Industry Research Committee Release, July 22, 1956.

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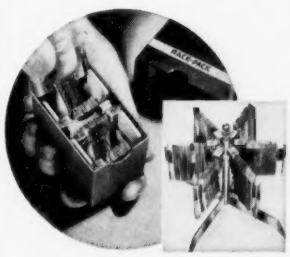

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What Price the Coffee Break?

WHEN I (H.M.T.) worked in London for a couple of years, now longer ago than I like to admit, we Americans were somewhat amused and condescending about the practice in practically every office of serving tea. I recall that the Canadian-born Managing Director of the Goodyear office over there had gone native and one of the girls in his office brought to his desk a steaming cup at a certain time every afternoon, probably with crumpets. If somebody was with him at the time, of course his caller was

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* One packet of powder in 1 pint of water makes a 1:15 Burow's Solution U.S.P. with Benzethonium Chloride 1:5,000.

given his tea too. I don't remember whether our own people, fresh from the States, tried to hold out against the "time-wasting" custom, but it is likely that the presence of a good many Britishers in our office forced us to conform. Now American business men are laughing rather ruefully, if at all. Our own coffee-break habit probably consumes more man-hours than all the tea drunk on the job in Britain. An editorial in our morning paper says that a survey has shown that 35 million workers on this side of the briny now take at least one coffee break a day, and many two. Somebody has figured out that the time taken for coffee in a year by a worker may add up to the equivalent of a two- or three-week vacation. But other figures in the editorial show that the coffee break can't be entered entirely on the debit side of the ledger. Of 1160 companies surveyed, 82% said the coffee break reduces worker fatigue, 75% that it improves morale, 62% that it even increases production. The coffee break now seems to be an established institution here. We'd be glad to hear from readers what they do about it. How is it working out in offices where coffee wagons make the rounds?—where there are dispensing machines? What are the advantages and disadvantages of the various ways of handling it, including the regular morning exodus to the coffee shoppe?

—*Personnel Journal*, May, 1956.

Comprehensive Course

NORTON NELSON, M.D., Chairman, Institute of Industrial Medicine, Postgraduate Medical School of New York University-Bellevue Medical Center, announces a full-time eight-week comprehensive course in occupational medicine for physicians, from September 10 through November 2, 1956. Among the subjects offered are: organization and administration of an industrial Medical Department; preventive and constructive medicine in industry; occupational diseases; toxicology and industrial hygiene for the physician; and biostatistics, communicable disease control, and epidemiology. Opportunities will be provided for attendance at medical, surgical and clinico-pathological conferences during the course. For further information address: Dean, New York University Postgraduate Medical School, New York 16.

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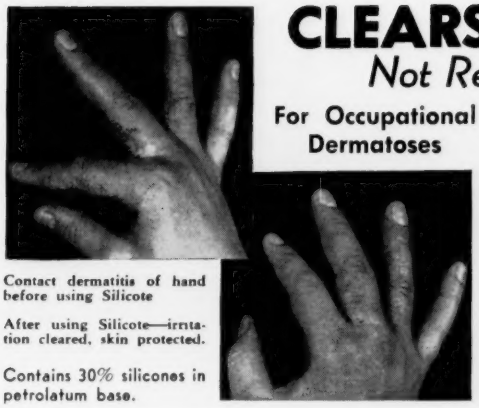

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1. Talbot, J.R. et al: J. Inv. Derm. 17:125
2. Morrow, Grant: Calif. Med. 80:21

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F.M.R. BULMER, M.D., Division of Industrial Hygiene, Department of Health, Toronto; RODGER A. WHITMAN, M.D., Hamilton; "Mental Health in Industry"—Panel Discussion—ALDWYN B. STOKES, Moderator, C.B.E., M.R.C.P. (L), Professor of Psychiatry, University of Toronto; RICHARD G. WARMINTON, M.D., Niagara Falls; WALTER BREMNER, M.D., Psychiatrist, Toronto; MR. W. CARON JONES, Industrial Psychologist, Toronto; MR. FARRELL TOOMBS, Sociologist, Toronto; "Radiation Hazards in Industry"—HENRY G. THODE, M.B.E., M.Sc., Ph.D., F.R.S., Principal of Hamilton College; "The Use of Radioactive Isotopes in Medicine"—CHARLES H. JAIMET, M.D., F.A.C.P., F.R.C.P. (C), Medical Director, Department of Medical Research, McMaster University, Hamilton, Ontario; "Management of Injuries of the Ankle"— JACQUES ROBICHON, M.D., M.Sc., F.R.C.S (C), Professor of Orthopedic Surgery, Ottawa University; "Report on the Small Plant Industrial Health Services Project at Kitchener, Ontario"—R. B. SUTHERLAND, M.D., D.P.H., Division of Industrial Hygiene, Department of Health of Ontario, Toronto; "Management Looks at Industrial Medicine"—MR. T. A. RICE, Vice-President, International Harvester Company, Ltd., Hamilton, Ontario.

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WRITE for FREE SAMPLES

Age Limits Illegal

COMPANIES are prohibited from placing age limits in help wanted ads by laws that go into effect this month in Pennsylvania and Rhode Island. Similar anti-age discrimination legislation is being considered by New York State Legislature, which has scheduled hearings for the fall, and may also be proposed in Illinois. With 800,000 persons over 45 presently looking for work, problem is expected to be spotlighted soon by national publicity campaign by Labor Department—with possible appeal to American business by President Eisenhower. Seriousness of problem pointed up by soon-to-be-released Labor Department study, which reveals: Three out of every four employer requests at public employment agencies ban middle-aged men. Large companies are biggest offenders. Nearly 90% of openings in companies employing 1,000 or more persons have age restrictions. By comparison, firms with 50-99 employees put age restrictions on only 75.5% of their openings.

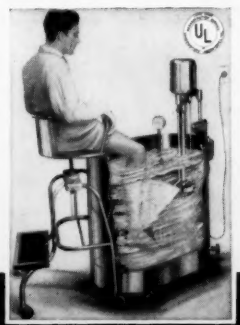
—*Industrial Relations News*, July 21, 1956.

Available

INDUSTRIAL Hygiene Foundation, Mellon Institute, Pittsburgh, announces the availability of reprints of the article, "Importance of Biological Research in Industrial Medicine" (*J.A.M.A.*, 161: 569 (June 16) 1956).

HM-200

Combination Arm, Leg, and Hip Tank for Subaqua Hydromassage and thermal therapy — mobile model complete with electric turbine ejector and aerator.



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STAINLESS STEEL PHYSICAL THERAPY EQUIPMENT

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PB-110

Hand, Elbow, and Foot Paraffin Bath with removable stand — electrically heated with thermostatic control.

Literature on these and other equipment on request

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Why Acid

for hand eczema?

The normal skin has an acid pH between 4 and 6. This acid mantle acts as a protective barrier.

When the skin is washed with soap or detergents, or is exposed to chemicals, solvents, et cetera, the protective acid mantle is removed.

This exposes the unprotected skin to contact irritants and pathogenic organisms. It results in a rise in the skin pH above 7, provides a fertile field for development of harmful bacteria and fungi, and may result in various types of dermatitis.

Dome Acid Mantle returns the skin to its normal acid pH in a matter of seconds and holds it for hours. Both the creme and lotion are greaseless and stainless.

AVAILABLE

Acid Mantle Creme pH4.2 in 1 oz. tubes, 4 oz. and 16 oz. jars. Acid Mantle Lotion pH4.5 in 4 oz. squeeze bottles and 16 oz. bottles.

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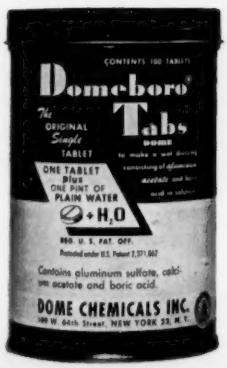
Domeboro makes a fresh solution of aluminum acetate (Burow's Solution 1:20) buffered to a pH4.2.

AVAILABLE—Tablets (individually Cellophaned) in cans of 12, 100, 500 and 1000. Packets (single dose) 12 and 100. Bulk Powder, 4 oz., 13 oz. and 4 lb.



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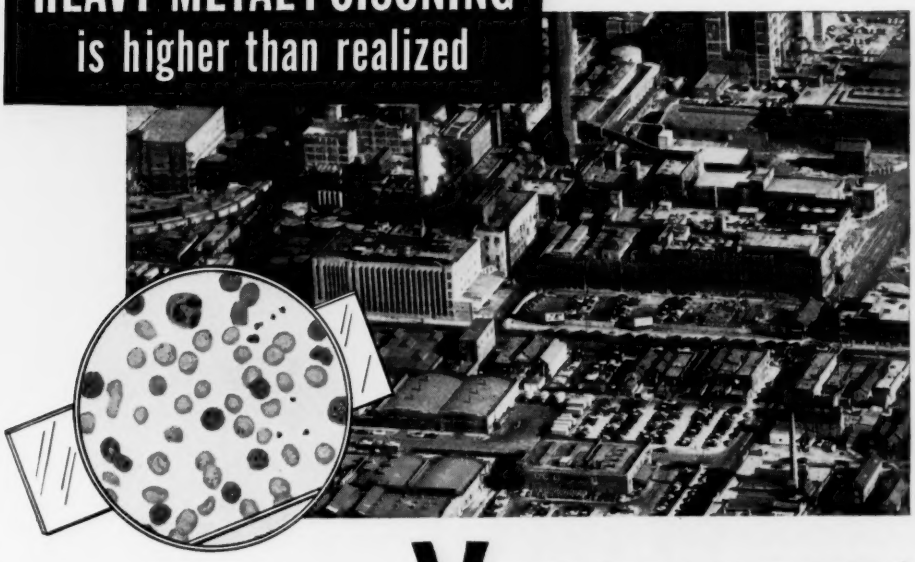

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INTRAVENOUS Complete instructions for dilution and administration accompany the ampuls. The average daily dose for an adult is 1 to 2 Gm. per day, given as two infusions. For children, the dose is not more than 0.5 Gm. per 35 pounds of body weight, given once or twice daily. Boxes of six 5cc. (1 Gm.) ampuls.

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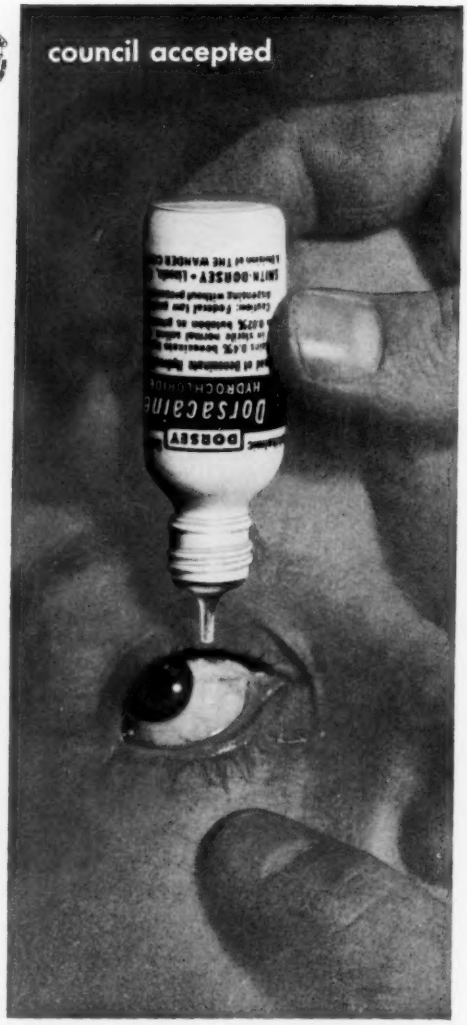

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virtually **nonsensitizing**
no cases reported of dermatitis occurring in patient's eye or on hands of physician.

relatively **nonirritating**
does not sting or burn when dropped into the eye—changes in the corneal epithelium or hyperemia of the conjunctiva rarely occur.

Average dose: *for tonometry,* 2 drops. *For minor surgical procedures,* 2 drops instilled 3 times at 90 second intervals.

Supplied: sterile normal saline solution with 0.02% Butoben as preservative, and containing 0.4% Dorsacaine Hydrochloride (benoxinate hydrochloride). In ½ oz. plastic squeeze bottle with dropper tip which delivers uniform drops (approximately 45 drops per cc.).

*Schlegel, H. E., Jr., and Swan, K. C.: A. M. A. Arch. Ophth. 57:663 (May) 1954.

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whenever an enema is indicated

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Disposable Unit

Anatomically correct rectal tube minimizes injury hazard . . . plastic squeeze bottle fits the hand, simplifies instillation . . . effective as soap suds, or more so,(1) FLEET ENEMA induces prompt, spasm-free evacuation.(2)

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Each 4½ fl. oz. unit contains, per 100 cc., 16 mg. sodium biphosphate and 6 gm. sodium phosphate.

(1) Swinton, N. W., Surg. Clin. of No. Am. 35:833, 1955
(2) Gross, J. M., Jl. Int. Coll. Surg. 23:24, 1955

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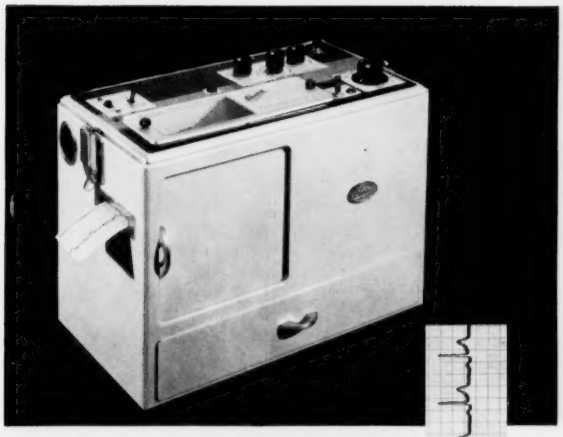

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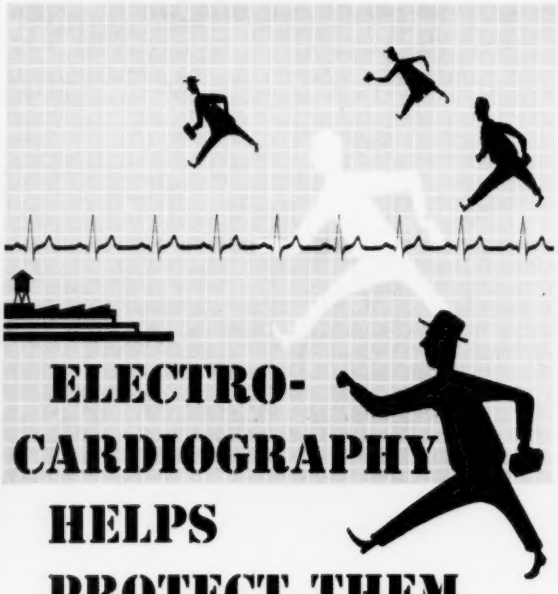

ELECTRO-CARDIOGRAPHY HELPS PROTECT THEM

ROUTINE ELECTROCARDIOGRAPHY during periodic check-ups today detects cardiac disease when it might otherwise not be noted. Discovery of the disease in an early, and possibly remedial, stage protects the worker and can be a guide in his proper job placement. Industrial physicians are also finding the electrocardiogram valuable in diagnosing cardiac episodes occurring at work.[1,2,3]

When you have decided that an ECG belongs in *your* medical department also, you will be interested in the "extra dividends" provided by the Sanborn Viso-Cardiette — such as a well-known *dependability* and *continuity of service*, continual *direct contact* with the designers and makers of the instrument, and *exclusive* by-mail service helps to augment the facilities of your nearby Sanborn representative.

Descriptive literature and details of a 15-day no obligation trial plan will be sent on request.

Bibliography:

1. OVERHOLT, B. M.: CARDIOLOGY — Routine Electrocardiography in Industry. INDUSTRIAL MEDICINE & SURGERY, 19:11, Nov. 1950.
2. TRAPNELL, JOHN M., JR., and LINDER, E. KERN: "The Electrocardiogram in Industry" INDUSTRIAL MEDICINE & SURGERY, August, 1955.
3. DURHAM, J. R., and MCGEE, L. C.: "The Electrocardiogram in the Examination of the Industrial Worker" ANNALS OF INTERNAL MEDICINE, 41:5, November, 1954.

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The prompt use of RIASOL in early cases of psoriasis quickly eradicates the scaly red patches and often prevents a relapse. This is the experience of many physicians.

In discussing prognosis, Sutton* in 1956 writes: "Lesions which have existed only briefly are more amenable to treatment than those of long standing . . . . It is common knowledge among experienced clinicians that at least some cases are thus 'cured', and the pessimism of prognosis should not be black."

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RIASOL is supplied in 4 and 8 fld. oz. bottles at pharmacies or direct.

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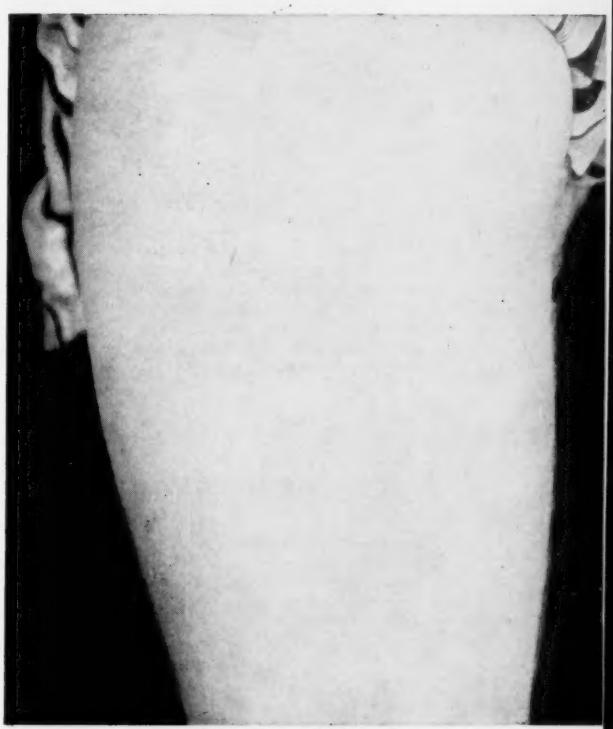

After Use of Riasol

* *Diseases of the Skin*, 11th ed., 1956, p. 932.

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May we send you professional literature and generous clinical package of RIASOL. No obligation. Write

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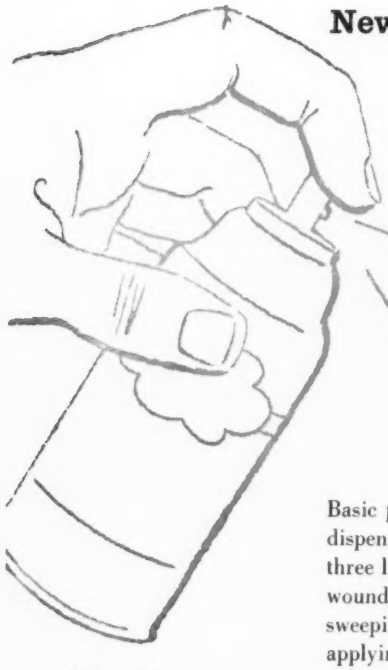

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Basic procedure in applying Aeroplast is simple. With the dispenser held about ten inches away from the lesion, two or three light coats are sprayed directly onto the aseptic dry wound and adjacent skin area. Each coat is sprayed on in one sweeping stroke, then allowed to dry thirty seconds before applying the next.

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Cost of Aeroplast dressing as applied is about ½ cent per square inch. For example, cost of dressing one 10 inch incision is approximately 20 cents. In most wounds, the initial dressing is sufficient until time to remove sutures.[2,3] Aeroplast is STERILE.

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Laparotomies, thoracotomies, herniorrhaphies, mastectomies, ileostomies, colostomies, pilonidal cysts, skin graft donor and recipient sites, severe excoriation . . . all offer opportunities for use of Aeroplast as the primary and definitive dressing.

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Whether the injury is from trauma, burn, excoriation, or minor surgery—Aeroplast protects from dirt and bacteria, is washable and flexible, and may help shorten off-the-job time. Patients appreciate its convenience.

1. Vibesate (Aeroplast), New and Nonofficial Remedies, 1955, p. 541.
2. Choy, D.S.J.: A.M.A. Arch. Surg. 68:33 (Jan.) 1954.
3. Rigler, S. P., and Adams, W. E.: Surgery 36:792 (Oct.) 1954.
4. Wexler, D. J., Bromberg, F., Rakieten, M. L., and Ryan, B. J.: Am. J. Surg. In Press.

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Help Keep the Arthritic Working– with Steroids plus BUFFERIN®

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This is the regime for arthritic patients which Spies[1] has advocated recently in the Journal of the American Medical Association:

. . . Give salicylates in full dosage.

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And for the salicylate. . .

Use BUFFERIN*—It is well tolerated by arthritics—a group especially susceptible to gastric upsets from straight aspirin.*[2]

If you wish, combine BUFFERIN *with the steroid of your choice, in the dosage you prefer. In this way you personalize your therapy to your patient.*

Each BUFFERIN tablet provides 5 gr. of acetylsalicylic acid with the antacids aluminum glycinate and magnesium carbonate. BUFFERIN *contains no sodium*, hence is suitable for those on salt-restricted diets.

REFERENCES:

1. J.A.M.A. 159:645 (Oct. 15) 1955.
2. J.A.M.A. 158:386 (June 4) 1955.

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